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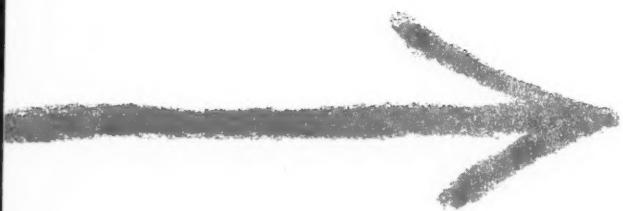
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Original Contributions

Value of Succinylcholine Chloride in Electroconvulsive Therapy

BURTRUM C. SCHIELE, M.D., and PHILIP M. MARGOLIS, M.D.

Minneapolis, Minnesota

IN RECENT months succinylcholine chloride (Anectine*) has become established as the most practical and valuable muscle relaxant for use with electroconvulsive treatment (E.C.T.). Every physician who uses electroconvulsive therapy should familiarize himself with this drug and be able to use it if the occasion demands, though he may or may not wish to adopt it as a routine procedure. One never knows when he will encounter one of those desperate situations when urgently needed electroconvulsive therapy is contra-indicated by some physical abnormality (e.g.—an acutely distributed patient with a fresh fracture). The purpose of this paper is to report on our experience and to outline a variety of techniques for use under varying circumstances.

Succinylcholine chloride is a white crystalline water-soluble solid made up of two molecules of acetylcholine chloride linked together at the alpha methyl groups. When injected intravenously, it rapidly produces voluntary muscle relaxation or flaccid paralysis. It acts at the motor end plate, as does acetylcholine, blocking myoneural conduction; this action is of short duration (one-half to three minutes) as the drug is rapidly hydrolyzed into the normal metabolic products of choline and succinic acid. The flaccidity develops in an order similar to that with curare, viz: (a) eyelids, (b) face, (c) extremities, (d) back, (e) intercostals, (f) diaphragm. Disappearance of the paralysis is in the reverse order. It is possible to

Dr. Schiele and Dr. Margolis are associated with the University of Minnesota Hospitals, Minneapolis 14, Minnesota.

*There are other drugs such as succinylcholine iodide which are reported to have essentially the same physiological action, but we have had experience only with the succinylcholine chloride. ('Anectine' is the Burroughs Wellcome and Company brand name.)

give electroconvulsive therapy with the patient so completely paralyzed that almost no muscle movement occurs.³

Following E.C.T., the average patient usually begins to breathe promptly—as if no succinylcholine had been used. However, prolonged apnea (three to twenty minutes) may occur in unusual cases. There is no known antidote; prostigmine is contra-indicated. Artificial respiration by manual chest compression is insufficient in such cases of prolonged apnea. Because of this possibility, one should not use succinylcholine chloride unless he is skilled in the administration of oxygen with a positive pressure mask.

The mechanism of prolonged apnea is not completely understood. There is some evidence that the cholinesterase of the plasma may play a part. Bourne and Evans^{2,4,5} observed that eight patients with delayed recovery showed a low plasma cholinesterase level, suggesting that caution be used in patients with liver damage. As an added safety precaution it may be advisable to have a suction apparatus, airway, and intubation tray available. If the physician is inexperienced or the patient's condition warrants it, an anesthesiologist could be called to assist in the first few treatments.

There may be minor but definite side effects and after effects. When the drug is given rapidly, the paralysis is often preceded by a transient stimulatory phase, involving some muscle twitchings. Murray⁶ reported chest soreness, burning in the throat, and pain in the jaw and back of the neck as the three occasional complaints of his patients. He injected himself with 20 mgm. of succinylcholine chloride and confirmed the above symptomatology referred to by his patients. The pain and burning diminished gradually over a

ELECTROCONVULSIVE THERAPY—SCHIELE AND MARGOLIS

period of twelve hours. On the other hand Mayrhofer⁷ gave himself a series of injections and experienced no side effects whatsoever.

As far as the evidence indicates at the present time, succinylcholine chloride has no observable detrimental effects on the cardiac status. Nowill, Wilson and Borders¹⁰ report some changes in electrocardiogram, blood pressure, and pulse recordings, which were however all transient (less than three minutes) and partially eradicated by the proper dosages of atropine sulfate (gr. 1/75 or higher) administered before the treatment. As a result succinylcholine chloride has been proposed as the drug of choice for cases with increased cardiac risk. In such cases we may use bag and mask controlled respirations with high oxygen concentrations before and/or after electroconvulsive therapy.

There are several possible techniques of administration. Most writers^{1,6,8,11} advocate succinylcholine chloride-sodium pentothal mixtures. Murray⁹ advocates the use of succinylcholine chloride alone, feeling that the addition of sodium pentothal needlessly complicates the treatment procedure.

The basic technique of the current University Hospitals plan involves the use of succinylcholine chloride by itself. This is modified as the need arises, as will be described later. As usual the patient gets no breakfast. Atropine, gr. 1/75 (0.8 mgm.) is given hypodermically thirty minutes before treatment. Everything is made ready before the injection of succinylcholine; that is, head band and mouth protector are in place, and the shock machine is warmed up and set. We place no roll under the patient's back, nor do we hold him.

With this technique the time factor is critical if the patient is to be spared unpleasant sensations. We inject the succinylcholine chloride rapidly intravenously; that is, in about three to five seconds. Verbal reassurance is given to the patient during the few seconds that it takes the drug to act. For example, he may be told that he will feel the medicine beginning to take effect but that he will be asleep very soon. Twenty-five seconds to thirty seconds after termination of the injection, the treatment is given. The hand-grip disorganization sign employed by Murray⁹ had not been consistently reliable in our experience.

Ten mgm. (0.5 cc.) is the usual initial dosage. If this fails to produce adequate relaxation, the

dosage of subsequent treatments is increased. We have seldom found it necessary to go beyond the 20 mgm. level. Once the dose is established for a given patient it has been found to remain constant.

Modifications of the basic technique are sometimes utilized. If a patient is fearful before the treatment or restless after it, sodium amytal, gr. iii orally one hour beforehand, is helpful. If this is insufficient and especially if the patient is markedly upset or complains strongly of muscle twitchings and/or smothering sensations, intravenous pentothal is used instead. Sufficient pentothal (from 50 to 200 mgm.) is injected to make the patient drowsy; this is followed by administration of succinylcholine chloride via the same needle but from a different syringe; then forty-five to sixty seconds later, the treatment is given. Some clinicians⁶ employ succinylcholine chloride-pentothal mixtures in the same syringe. This method may work if the mixture is administered at once. However, since succinylcholine chloride hydrolyzes rapidly when mixed with pentothal, the technique would appear unreliable, as the effective amount of succinylcholine which actually reaches the patient will be unknown and variable.

During the period from July 1, 1953 to June 30, 1954, we have treated 114 patients with a total of 957 electroconvulsive treatments. A breakdown of the 957 treatments revealed the following:

- 137—Treatments with sodium pentothal alone. Of these 130 were given during the first part of our 12-month period. Later when the staff had become impressed with the value of succinylcholine, almost everyone was given its benefit.
- 667—Treatments with succinylcholine chloride alone. In 23 treatments the patient was given sodium amytal, gr. iii, orally one hour beforehand.
- 110—Treatments with succinylcholine chloride and sodium pentothal in combination.
- 43—Treatments with no medication.

Since we are stressing the role of succinylcholine chloride in this report, we shall discuss our findings on the bases of (1) complaints of the patient concerning the immediate effect of the drug; (2) post-treatment complaints, and (3) degree of modification of the grand mal seizure.

1. In about one-quarter of the treatments, there were complaints relative to the immediate effect of succinylcholine just before the administration of electroconvulsive therapy. Of those who

ELECTROCONVULSIVE THERAPY—SCHIELE AND MARGOLIS

had complaints, about half voiced them immediately; the other half told us about them later in the day, that is, they remembered well how they had felt. Most of these complaints were minor, consisting of vague "discomfort," mild restlessness and moderate anxiety. Several patients on one or more occasions revealed considerable apprehension, spoke of twitchings of the muscles (especially of the face) and smothering sensations. One patient in describing her distress said, "I couldn't breathe; I wanted to talk and scream but I couldn't." About 80 per cent of these latter difficulties were resolved, either by sodium amytal orally beforehand or by the use of a pentothal-succinylcholine combination. The above complaints were more numerous during the first few months of our experience. As our technique improved and as our staff gained confidence, the complaints occurred less and less frequently.

2. Probably most patients who receive E.C.T. suffer from some degree of post-treatment discomfort such as headache, nausea, occasional vomiting. These complaints occurred in many of our patients irrespective of the type of medication used. In addition to the above, several patients had complaints which appeared to stem from the use of succinylcholine chloride: (a) dryness of the throat, (b) pain in the neck, chest, and back, and (c) jaw and calf pain. Patients who did not receive succinylcholine chloride did not complain of these symptoms. These complaints persisted with decreasing severity for only a few hours. They were seldom mentioned spontaneously but could be elicited by questioning after about 15 per cent of the treatments.

3. Modifications of the grand mal seizures were arbitrarily divided into the classifications good, fair, poor or none. We considered the modification to be good if there was very little tonic and clonic reaction. We did not feel it was necessary that the convulsive seizure be completely eliminated as would be possible with this drug. If the patient had only slight modification the reaction was classified as poor. On a dosage of 10 mgm. a trifle more than half of the treatments fell into the fair or poor categories; but when the dosage was raised to 15 or 20 mgm., 80 per cent of the modifications were good and 15 per cent were fair. In two cases, when intravenous pentothal was used in combination, it was necessary to raise the dose of succinylcholine (once up to 25

mgm.) to obtain a satisfactory modification of seizure. The succinylcholine had no apparent effect whatsoever in two other cases in spite of 20 and 25 mgm. doses. We did not go higher. Once a satisfactory dosage was obtained for a given patient, we found this to produce a constant effect. There was one exception—in this patient for some unknown reason the same dosage brought different responses on different days.

It is not part of our routine to obtain spine x-rays before E.C.T., and we take post-shock x-rays only if the patient has physical complaints referable to a possible skeletal injury. In the above-reported cases, there was no clinical evidence of fractures or dislocations. X-rays were done in the case of four patients all of whom complained rather markedly of back pain; they were all reported as negative.

We had a few special problems. One female patient was apneic for seven minutes. She had been given 250 mgm. pentothal, followed by 10 mgm. succinylcholine, preceding the E.C.T. She received oxygen via the bag-breathing method until she began breathing again. A second female patient appeared to have recovered satisfactorily but suddenly became apneic in the recovery room at least five minutes after E.C.T. had been administered. She was apneic for two minutes, was not given oxygen, recovered spontaneously. These two patients experienced no difficulties in succeeding treatments. The first treatment of another female patient, utilizing 10 mgm. succinylcholine, produced a complaint of severe pain in the neck with muscle spasm, necessitating cessation of therapy for ten days. Treatments were then resumed with 15 mgm. succinylcholine without further difficulty. Whether or not this was related to the succinylcholine, or even to the E.C.T., is open to question.

It is of some interest to note that the patient who had the greatest difficulty in this series was one who received no succinylcholine but rather pentothal alone (150 mgm.). He was apneic for 10 minutes and suffered severe laryngospasm. He was breathed by the bag method until he took over control himself. Subsequent treatments without any medication led to mild laryngospasm but much less severe in nature.

It would be well to mention that the use of succinylcholine chloride did not appear to influence the therapeutic effect of E.C.T. in any way.

ELECTROCONVULSIVE THERAPY—SCHIELE AND MARGOLIS

Summary

Succinylcholine chloride has proven to be an ideal muscle relaxant for routine use with electroconvulsive treatment. Because of its rapid but short-lived action, it is far superior to most other drugs. Its use allows the physician to administer electroconvulsive therapy to a larger variety of patients than heretofore; aged persons, those with orthopedic complications, and cardiac cases, can be treated with less risk.

We have described our treatment procedures: as a routine, we have found it safer and simpler to give succinylcholine alone. This is satisfactory in the majority of cases. For those patients who are unduly fearful or anxious, the procedure may be modified by the use of a barbiturate. Because of the occasional occurrence of prolonged apnea, a positive pressure oxygen apparatus must be available.

Although the patients occasionally complain of certain side effects, we wish to stress that these are minor in nature. They occurred much less frequently as we gained experience and our technique smoothed out.

With a dosage of 10 to 25 mgm., we have found succinylcholine to sufficiently modify or eliminate the convulsive reaction in almost everyone. There

were two exceptional cases in which it had no effect whatsoever.

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NUMBER OF PHYSICIANS REACHES NEW PEAK

A record graduation of 6,861 physicians during the past year by the nation's medical schools has boosted the ratio to an all-time peak of one physician for every 730 persons in the United States. This ratio will be lowered even more in the next few years, as the number of medical graduates is expected to rise due to the continued expansion of the country's medical schools.

Today's physician population has now reached approximately 220,100. The record graduation figures, as released in the 54th annual report on medical education in the United States by the American Medical Association's Council on Medical Education and Hospitals, include the following:

Enrollment of 28,227 is the largest number of medical students in the history of the United States.

Freshman class enrollment of 7,449 also is a record. More than 76 million dollars was spent during 1953-1954 for new facilities, remodeling or completion of buildings for medical instruction.

Budgets for medical schools during 1954-1955 total more than 143 million dollars.

A total of 21,328 physicians did volunteer teaching without pay during the year.

Ten new four-year schools are in construction or planning stages and will be in operation within the next few years. These schools will be at the Universities of California, Mississippi, Miami, Missouri, Florida, West Virginia, Kentucky, North Dakota and Yeshiva University of New York and Seton Hall University. In addition, three other medical schools are being considered.

Hearing Loss in Children

KINSEY M. SIMONTON, M.D.

Rochester, Minnesota

FOR THE past two years the Committee on Conservation of Hearing of the Minnesota State Medical Association has been engaged in formulation of a program which is directed toward preservation of hearing among the people of Minnesota. Five population groups, each of which has somewhat different problems, are being considered. The categories are: (1) children of preschool age, (2) children of school age, (3) adults, (4) hearing loss in industry and (5) hearing loss among the aged.

Initial emphasis is being placed on the children of school age. This group was selected owing to means of locating individuals through the agencies of the public health services and the school systems in our communities. The program for this group is threefold: location of individuals, information to physicians, and information to parents of handicapped children.

For purposes of location the state was divided into seven districts. Each district was assigned to a member of the committee residing in that district. Committee members asked public health agencies and school systems within the individual districts for the names of children with hearing handicap. For purposes of this survey, handicapping loss of hearing was arbitrarily set at a loss of 30 decibels or more in both ears in one or more of the speech frequencies of 500, 1,000 and 2,000 cycles per second. The co-operation given by these agencies has been admirable. The names of 1,106 children have been submitted to the committee. This number is not complete. Facilities for testing are not available in all communities. One district reported by code number only.

From the Section of Otolaryngology and Rhinology, Mayo Clinic and Foundation. The Mayo Foundation is a part of the Graduate School of the University of Minnesota.

Read at the meeting of the Minnesota Academy of Ophthalmology and Otolaryngology, Duluth, Minnesota, June 7 to 9, 1954, and at the meeting of the Southern Minnesota Medical Association, Winona, Minnesota, September 13, 1954.

Detection

Early detection is the key to successful therapy or rehabilitation of children who have hearing loss. Our therapeutic victories will be confined to those patients whose hearing loss is due to inflammation of the middle ear or to lymphoid hypertrophy in the nasopharynx. The success of therapy depends on achieving remission of the pathologic process before permanent changes occur. The results of rehabilitation programs are less dramatic, but are no less dependent on early recognition of the handicap with early institution of training measures.

The parents are usually the first to suspect impairment of hearing in the young child. The sense of hearing is present at birth. Some newborn infants will respond to a handclap, although response is inconsistent. It is not usual for children to be brought to a physician for evaluation of hearing before the age of one year. Only severe defects of nerve function are detected at early age. Unilateral or partial loss of hearing may escape detection by the parent. Parents are quite likely to be aware of the bilateral partial loss of hearing associated with bilateral inflammation.

The examination of hearing of young children requires patience, skill and equipment. Froeschels and Beebe found that thirty-one of thirty-three newborn infants responded to tests using Urbantschitsch's whistles as the stimulus. Response was usually by acousticopalpebral reflex. No newborns tested responded to tuning forks. The authors attributed this difference to the strong stimulus required to overcome poor middle-ear function in the newborn.

Ewing and Ewing studied children with normal as well as those with defective hearing. They reported that from birth to two months of age percussion sounds elicit reflex response; that between two months and one year the voice becomes the better stimulus; that moderate voice is better than loud or whispered voice; that learned

HEARING LOSS IN CHILDREN—SIMONTON

responses replace reflex responses at this age; and that children older than one year respond best to the quiet voice. Various toys were used to hold the child's attention and to evaluate response to spoken stimuli. Similar tests were used for children suspected of deafness. Reflex responses were replaced by learned responses at a later age than in children with normal hearing. Residual hearing for loud sounds was determined by reflex response to loud stimuli. The authors concluded that if a child does not respond to voice by the end of one year he is deaf or has some other gross defect; that if he never turns his head toward the voice of a familiar person at three feet he is totally or severely deaf; and that all children more than the age of one year who fail to respond to a loud voice are totally deaf.

Quantitative hearing tests for young children require special equipment. Bordley and associates reported favorable results from the use of the psychogalvanometer. Dix and Hallpike developed another conditioned-reflex test using a "peep show."

Occasionally hearing loss is first noted by teachers after the child attains school age. Poor progress and lack of attention in school may suggest deficient hearing.

The screening type of tests carried out by school and public health organization is responsible for recognition of many children with partial loss of hearing. These tests are of tremendous value. In my experience, errors tend to be in the direction of indicating too great a loss of hearing. This is no doubt largely due to inattention on the part of the child.

Otologic evaluation is the final step in detection. The otologist has the experience in diagnosis necessary to select those children suitable for therapy from the group requiring rehabilitation measures. He also has the special equipment and skill needed for evaluation of the hearing defect and for following the progress of therapeutic efforts. The experience of the otologist in treatment of otic infection is necessary in those patients who fail to respond to usual measures. The otologist is the only physician who is willing to treat chronic infections of the ear. Chronic infections merit his care as soon as they are recognized. Adequate, early treatment of chronic infection may prevent continuing destruction of the sound-conducting mechanism.

Treatment

Diagnosis of the cause of hearing loss is prerequisite to treatment. The conditions which cause hearing loss in children and which are amenable to therapy are occlusions of the external auditory canal by cerumen, inflammation, foreign bodies or atresias, and interference with the function of organs in the tympanic cavity. Reversible causes of middle-ear dysfunction are acute otitis media, serous otitis media, some cases of chronic otitis media, and impaired function of the eustachian tube. Hypertrophy of the lymphoid tissue in the nasopharynx is an important causative factor in lesions of the middle ear. Infections of the nose and tonsils less frequently cause disease of the ear.

Causes of hearing loss in children not amenable to therapy are the end result of middle-ear inflammation and the loss of nerve function. The latter may be congenital in origin owing to heredity, rubella infection in the mother during the first trimester of pregnancy, erythroblastosis or syphilis, or acquired, owing to mumps, trauma, meningitis or syphilis.

The outstanding approach to relief of hearing loss in children is management of lymphoid hypertrophy in the nasopharynx. Adenoidectomy is the principal weapon. In order to achieve relief of middle-ear and eustachian-tube dysfunction, adenoidectomy must be done carefully and thoroughly. The philosophy that adenoidectomy is an adjunct procedure secondary in importance to tonsillectomy is untenable. Blind adenoidectomy is to be avoided. It is imperative that the nasopharynx be subjected to painstaking direct visual inspection and that all remaining lymphoid tissue be carefully removed before the operation is completed. The palate retractors of Lothrop and Sennuria are effective instruments. Finger palpation is valuable in locating bits of lymphoid tissue high in the nasopharynx. The Kelly direct-vision adenotome is also a valuable instrument. Adequate exposure requires movement of the patient's head to bring all areas of the nasopharynx into view. Sharp alligator biting forceps such as those designed by Meltzer facilitate removal of tissue from the lateral bands. For removal of the main adenoid mass, a series of La Force adenotomes in various sizes is essential. One cannot work efficiently with an instrument either too large or too small for the nasopharynx.

Each surgeon should plan and follow a definite

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routine in adenoidectomy which assures clean removal of all lymphoid tissue. The final step should be a searching inspection of the surgical field.

Age is not a contraindication to adenoidectomy if sufficient reason exists for doing the operation. The adenoid is not confined in a capsule. Some lymphoid tissue remains after the most painstaking operation; therefore, recurrence may be anticipated when operation is done in very young children. It is well to advise the parents of this possibility, as secondary operation may be necessary a few years later.

Irradiation of the nasopharynx has limited use in treatment of lymphoid hypertrophy. Small residual lymphoid masses may be reduced in size by irradiation although this agent is not satisfactory for removal of larger masses. Irradiation is not a substitute for adenoidectomy.

Finger massage of the nasopharynx has not proved effective for control of lymphoid overgrowth and control of infection.

Acute suppurative otitis media usually responds favorably to the use of antibiotic drugs. The outstanding cause of failure is inadequate dosage of the drug which results in temporary masking of the symptoms followed by recurrence of the disease. An adequate program is one which provides effective concentrations of the drug at the site of the infection for a period of time sufficient to eliminate the infection. Inadequacy may result from small doses, infrequent doses, or discontinuation before the infection has subsided.

Myringotomy, once the principal weapon in treatment of acute otitis media, is no less valuable today. Institution of surgical drainage of the middle ear early in the course of acute suppuration promotes early healing and decreases the possibility of permanent changes in the middle ear. Myringotomy certainly should be done in every instance of delayed resolution of acute otitis media.

Serous otitis media, if repeated or prolonged, may have permanent influence on hearing. Vigorous therapy is indicated. A few patients respond to the use of antihistamine drugs or inflation of the eustachian tube. Direct removal of secretions from the middle ear by myringotomy and suction or by needle puncture is the preferred direct treatment. Treatment of adenoid hypertrophy is of primary importance. Treatment of nasal infection or of allergy is effective in some patients.

Mastoidectomy has been advocated for persistent disease. In my experience the results of mastoidectomy have been unsatisfactory.

Chronic otitis media is basically a destructive process. Early evaluation and treatment by an otologist may in some instances arrest the destruction of tissue and avoid further loss of hearing. Treatment by antibiotic drugs administered systemically is unsatisfactory. Local treatments directed toward removal of debris, promotion of free drainage, and control of infection by topical application of effective drugs are useful. Modified radical mastoidectomy effectively eliminates the disease and at the same time preserves hearing in suitable patients.

Other methods of treatment which are of value in prevention of ear disorders which lead to loss of hearing are treatment of nasal disorders, infections, allergies, or obstruction, and immunization against or preventive management of the acute diseases of childhood.

There is no convincing evidence that nerve deafness benefits from vitamin or mineral therapy.

Rehabilitation

Rehabilitation of the hard of hearing is not the province of the physician; however, the physician can be of great service to his patients by advising them of the possibilities, the aims, the methods and the availability of rehabilitation.

Areas in which advice of the physician is of especial value to the patient or his parents are those of the hearing aid, parental instruction, and available school instruction for the handicapped child.

Selection of Hearing Aids

The hearing aid has a single function: to increase the loudness of sounds reaching the ear. The simplest hearing aid is the ear trumpet or speaking tube. The diaphragm-and-rod prosthesis is useful for a limited number of individuals. This system is more adaptable to use by adults than by children. The electric hearing aid has many features which make it the most widely used prosthetic device for the hard of hearing.

The electric hearing aid is a miniature system made up of the component parts of the public address system, microphone, amplifier, power source and speaker. It is essential that all component parts be included in the instrument for

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practical function. Advertisements for hearing aids without batteries, cords or earpieces are misleading.

Receivers

Persons with conductive deafness and normal nerve function may be fitted with a bone-conduction receiver. The air-conduction receiver is however, more efficient and should be advised unless disease of the middle ear or canal interferes with wearing the insert. Hidden-type ear molds sacrifice efficiency by reducing intensity and introducing distortion into the signal. These factors are roughly proportioned to the length of the air column between the receiver and the ear. Day has advocated wearing the receiver in the ear where it can be seen. This prompts speakers to enunciate clearly.

The standard hearing aids are very similar in their performance characteristics. Much of the difference in cost between different makes of hearing aids is attributable to the service of dealers in assisting and encouraging new users of hearing aids. For this reason the service policies of the dealer are more important than the make of instrument, especially for the person wearing an aid for the first time.

Since the hearing aid is a signal booster only, it cannot be expected to amplify wanted sounds and suppress unwanted sounds, or to clarify poorly enunciated speech. Amplified sound is most helpful for persons with conduction losses, but is of limited benefit for persons with perception loss. Amplification is of least benefit to the ear with sharp dips or drops in the pure-tone curve, or the ear which distorts the signal as in patients with Ménière's disease.

Persons whose threshold for the better-hearing ear is 35 decibels or more will benefit from use of a hearing aid. Those whose loss is between 35 and 75 decibels usually experience satisfactory results. With losses between 75 and 95 decibels the results justify wearing the instrument.

A hearing aid is of doubtful value to the patient whose hearing threshold for the speech frequencies in the better ear is 95 decibels or more.

The most recent major development in hearing aids is substitution of the transistor for the vacuum tube. This results in a noteworthy decrease in power consumption, and thus in battery costs. Laboratory reports indicate that trans-

istor instruments compare favorably with vacuum-tube instruments in range and fidelity of amplification for speech. However, clinical comparisons reveal a preference for the tone qualities of the vacuum-tube instruments. Instruments in which only the power tube is replaced by a transistor combine the best features of the two types.

Instruction by Parents

Instruction in the home by parents is of utmost importance to the hard-of-hearing child, particularly for the child of preschool age. It is important that training begin as soon as the defect is recognized.

The basic objectives of training in the home are fourfold: (1) talk to the child as much as possible, taking care to talk at close range and to face the child when talking, (2) associate words with objects and actions, (3) encourage the child to speak, (4) encourage contact with hearing children. Do not build up the idea that the hard-of-hearing child differs from other children.

Parents need help in order to instruct the child effectively. Advice to parents is available through the following: Institute for Parents, University of Minnesota; local hearing societies, Minneapolis, St. Paul, Duluth and Rochester; Audiology Clinics, University of Minnesota and Mayo Clinic; Committee on Conservation of Hearing, Minnesota State Medical Association; and John Tracy Institute, University of Southern California, Los Angeles, California.

School Instruction

School instruction plays a vital role in training of the hearing-handicapped child. School instruction is available in Minnesota.

Nursery schools for hearing children are valuable in developing the social contacts of the hard-of-hearing child, and should be used where special schools are not available. Special nursery schools are maintained by the Minneapolis Hearing Society and the St. Paul Hearing Society. Private boarding-school facilities are available at the Robey-Allen School in Faribault.

The public school systems of many communities maintain speech and hearing therapists to aid the hearing-handicapped child.

(Continued on Page 27)

Minnesota Maternal Mortality Study

By the MATERNAL MORTALITY COMMITTEE
of the Committee on Maternal Health,
Minnesota State Medical Association

THIS REPORT is the fourth concerning the state-wide Minnesota Maternal Mortality Study. The material to be presented, which has not been previously reported, includes all maternal deaths occurring from April 1, 1952, through March 31, 1953, hereafter referred to as the "1952 Survey." References will be made to previous reports dealing with the study in 1941-42, 1950 and 1951.^{1,2,3} Details regarding the method by which the study is carried out have been published.²

As in previous years, all deaths associated with pregnancy and those occurring during a period of three months postpartum are included regardless of cause of death (Table I). Deaths due to chorionepithelioma are also included. The study thus includes many deaths in which there is no obvious direct relationship between pregnancy or the postpartum state and the death, but the study has made it amply clear that death certification information cannot be relied upon in attempting to distinguish "obstetric" from so-called "non-obstetric" deaths.⁴ Exclusion of any maternal deaths from detailed study would therefore necessarily be done on an arbitrary basis. It has been considered preferable to include all deaths and to report a gross or over-all mortality rate. For purposes of comparing the Minnesota Maternal Mortality rate with that of the United States generally the rate excluding deaths considered "non-obstetric" by the committee is also shown in Table I. As indicated in Table I the mortality rate for 1952 closely approximated that for 1951. The low rate is considered further evidence of the continuing excellence of the obstetric care being administered by Minnesota physicians.

Source of Reporting

The source of reporting of the maternal deaths for the past three years is shown in Table II. The percentage in each category for each of the three years has been approximately the same. It

TABLE I. MATERNAL DEATHS IN MINNESOTA.
STUDIES FOR 1941, 1950, 1951 AND 1952

	Number Deaths	Number Births	Gross Mortality Rate Per 1000 Live Births†	Maternal Mortality Rate Per 1000 Live Births‡	U. S. Maternal Mortality Rate Per 1000 Live Births
1941	112	55,293	2.03	1.68	2.8*
1950	68	76,074	0.89	0.59	0.83**
1951	57	80,099	0.71	0.45	0.71**
1952	58	78,990	0.73	0.42	

*Average for 1941 and 1942

**Unofficial

†Including all maternal deaths from whatever cause

‡Excluding deaths considered as non-obstetrical by the maternal mortality committee

TABLE II.
SOURCE OF REPORT OF MATERNAL DEATHS

	Number	Per Cent
Cases found from death certificates (with or without preliminary reports from physician, hospital, etc.)	135	73.8
Sources other than death certificates	48	26.2
Cross-match of death with birth certificate 24-13.1% Others 24-13.1%		
Total Deaths 1950, 1951, 1952	183	100.0

can be seen that approximately one-fourth of the cases were found by other than the usual means and therefore would not be included in the ordinary reporting of the maternal mortality rate. Many of the deaths so discovered are so-called non-obstetric deaths, but many others are not. In the past year they have included such cases as an air embolus from attempted self-induced abortion, a death from arteriolosclerotic toxemia occurring three weeks postpartum and a death from postpartum hemorrhage.

Cross matching of all death certificates of women aged fifteen to forty-five years with birth certificates has led to the discovery of twenty-four cases in three years. Another twenty-four cases were found through a variety of sources including reports of hospitals and physicians. Such reports are now required by the State Department of Health within three days of the time of death of a patient dying in association with pregnancy

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TABLE III. ANALYSIS OF DEATH CERTIFICATES

	No.	Per Cent	No.	Per Cent
Death certificates correct and complete in all details	57	31		
Death certificate correct in all details reported	54	30	111	61
Death certificates incorrect			72	39
Death certificates incorrect as to cause of death			52	28
Total maternal deaths (1950, 1951, 1952)			183	100

positive diagnosis on the death certificate when none was possible. There have been several deaths each year in which the true cause of death could not be determined even after complete autopsies were done. The cause of death in such cases should have been listed as unknown, yet in each instance a definite diagnosis was inserted on

TABLE IV. PREVENTABILITY OF MATERNAL DEATHS IN MINNESOTA

	1941		1950		1951		1952	
	No.	Per Cent						
Preventable	82	73.2	22	32.4	24	42.1	10	17.2
Not preventable	27	24.1	45	66.1	32	56.1	47	81.0
Not determinable	3	2.7	1	1.5	1	1.8	1	1.7

TABLE V. OBSTETRIC AND NON-OBSTETRIC DEATHS

	1941		1950		1951		1952	
	No.	Per Cent						
Obstetric deaths	93	83.0	46	67.6	39	68.4	33	56.9
Non-obstetric deaths	19	17.0	22	32.4	18	31.6	25	43.1

or the postpartum state. It is felt that no maternal deaths in Minnesota are now being missed with the possible exception of some associated with pregnancies of less than twenty weeks duration in which the filing of birth certificates is not required and occasional cases occurring in undelivered patients. It seems likely that a correction factor of considerable magnitude is applicable to rates being reported from states where similar efforts at case findings are not carried out. In reports arrived at by ordinary means this error is added to that involved in the exclusion of "non-obstetric" deaths. Further gross errors follow the use of unchecked death certificates for information concerning maternal mortality rates (Table III).

Inaccuracies of Death Certificates

The data in Table III indicate that it is hazardous at best to arrive at conclusions based on information derived from unchecked death certificates. Only 31 per cent were complete and correct and 39 per cent were incorrect in some detail. Perhaps the most significant feature is the fact that thorough evaluation of the cases has led the committee to change the diagnosis of the cause of death in 28 per cent of the cases. The inaccuracies were of many types, and not always unintentional. A common error was to make a

the death certificate. In 1952 the cause of death in one instance was listed as pulmonary embolism and the patient actually died of postpartum hemorrhage. In another instance a patient known to have a normal heart died as a result of drowning. The death certificate was signed by a lay coroner with the cause of death being listed as acute cardiac failure actually due to mitral heart disease. Another patient whose death certificate showed the cause of death as pulmonary embolism actually died of air embolism from air pumped into her veins under pressure through an empty transfusion bottle. Still another patient whose death certificate showed epilepsy as the cause of death actually died of postpartum hemorrhage. Many more examples from each year's survey could be cited.

Results of 1952 Survey

A most notable achievement of 1952 was the reduction of the number of deaths considered preventable to ten or 17.2 per cent of the total (Table IV). This would scarcely have been believed possible eleven short years ago when there were no less than eighty-two preventable deaths or 73.2 per cent of the total for that year. Part of the reduction in numbers of preventable deaths may be accounted for by the fact that as shown in Table V there was a further reduction

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in the number of deaths due to "obstetric" causes. The majority of the preventable deaths each year are in this group. On the other hand, the reduction of the absolute numbers of deaths due to obstetric causes is itself a real indication of improvement in care.

There are other evidences of improvement in

five other post-mortem cesarean sections were done again with failure in all.

Serologic tests for syphilis were done in greater numbers in 1952 (Table VII). A much larger increase took place in the number of Rh determinations carried out (Table VIII). This was done early in pregnancy in twenty-nine cases or

TABLE VI. TYPE OF DELIVERY

	1950		1951		1952	
	No.	Per Cent of Delivered Patients	No.	Per Cent of Delivered Patients	No.	Per Cent of Delivered Patients
Undelivered	17		21		27**	
Spontaneous	24	46.2	16	44.4	13	40.6
Operative	28	53.8	20	55.6	19	59.4
Indicated	19	8		16		
Not Indicated	9	12		3		
Totals	69*	100.0	57	100.0	59	100.0

*One set twins.

**Includes seven delivered by post-mortem cesarean section.

TABLE VII. SEROLOGIC TESTS FOR SYPHILIS

	1941		1950		1951		1952	
	No.	Per Cent of Registered Patients						
Unregistered	18		6		13		12	
Not obtained	64	68.1	38	61.1	25	56.8	20	43.5
Obtained	30	31.9	24	38.9	19	43.2	26	56.5

TABLE VIII. RH DETERMINATIONS

	1950		1951		1952	
	No.	Per Cent of Registered Patients	No.	Per Cent of Registered Patients	No.	Per Cent of Registered Patients
Unregistered	6		13		12	
Not obtained (regist. pts.)	23	37.1	17	39.5	8	17.4
Obtained at hospital	11	17.7	10	23.3	9	19.5
Obtained early in pregnancy	28	45.2	16	37.2	29	63.0
No data			1			
Totals	68	100.0	57	100.0	58	99.9

care such as is indicated by a review of the operative deliveries (Table VI). While the number of operative deliveries in 1952 did not change significantly, the remarkable fact is that only three (15.8 per cent) were considered not indicated. This compares with approximately 40 per cent in the years 1950 and 1951 combined. Only four patients who died in 1952 were delivered by cesarean section. Adequate indication existed for three of these operations. One unindicated mid-forceps and one unindicated version and extraction were done. Of interest were seven post-mortem cesarean sections all said to have been done within five minutes of death. No living infants resulted. In previous years of the study

63 per cent of the patients registered for care, and in five of the cases where it was not done early the patients were primigravidae and the indication therefore not so urgent.

The number of autopsies performed is shown in Table XIV. The percentage in each category for the past three years has been approximately the same. While 38.8 per cent adequate autopsies is considered good and is, of course, a vast improvement over the 8 per cent obtained in 1941, there is room for more improvement here. The majority of the failures to obtain autopsies are due to physician inertia. The twenty-one cases in which autopsy was not requested in 1952 include five coroners' cases.

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More consultations were obtained in 1952 (Table IX), and it was thought indicated in only eight of the cases in which it was not obtained. However, further consultation was indicated in the case of four patients seen by one consultant and in many other instances consultation was obtained too late to be of value.

volved do not require repeating here. There is evidence that some re-education regarding the value of the various pelvic measurements is needed in some areas. In the past two years fifteen of eighteen incompletely measured pelvises were evaluated only with respect to the external measurement including the interspinous, inter-

TABLE IX. CONSULTATIONS

	1941		1950		1951		1952	
	No.	Per Cent of Registered Patients						
None	63	56.2	29	42.6	28	49.1	22	37.9
Indicated		17		14		8		
Not indicated		12		14		14		
Adequate	10	9.0	22	32.4	17	29.8	30	51.7
Inadequate	39	34.8	17	25.0	12	21.1	6	10.3
Totals	112	100.0	68	100.0	57	100.0	58	99.9

TABLE X. PELVIC MEASUREMENTS

	1941		1950		1951		1952	
	No.	Per Cent of Registered Patients						
Unregistered	18		6		13		12	
Not measured or incompletely measured								
Measured	77	81.9	40	64.5	32	72.7	25	54.3
	17	18.1	22	35.5	12	27.3	21	45.7

TABLE XI. PRENATAL CARE

	1941		1950		1951		1952	
	No.	Per Cent						
Adequate	2	1.9	15	24.2	6	13.6	10	21.3
Faulty, contributory	55	52.9	14	22.6	10	22.7	5	10.6
Faulty, not contributory	47	45.2	33	53.2	28	63.6	32	68.1
None	8		6		13		11	
Totals	112	100.0	68	100.0	57	99.9	58	100.0

The data in Table X shows a very gratifying increase in the frequency with which pelvic measurements were done. Notwithstanding the improvement, measurements were not done or were incompletely done in more than one-half of the patients who died. It is difficult to understand why this is true. The evaluation of the pelvis necessary to satisfy the minimum requirements as defined by the committee include measurement of the transverse diameter of the outlet (satisfied by the "fist" test), a measurement of the diagonal conjugate and palpation of the sacrum and ischial spines.

The amount of time and effort involved in this evaluation beyond that required for an ordinary pelvic examination is negligible. The rewards in-

cristal, intertrochanteric and Baudelocque's diameters. These measurements are now widely recognized as being valueless in estimating the capacity of the true pelvis although they have some value for other purposes. Yet in each instance the physician involved apparently felt that he was satisfying the necessary requirements regarding pelvic mensuration.

The data regarding care given in the prenatal period, during labor and delivery and in the puerperium to patients who died during the four years of the study are shown in Tables XI, XII and XIII. The minimum requirements for adequate obstetric care adopted by the committee have been published.² Adequate care was given in a significantly higher percentage of cases in 1952,

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but there is room for much improvement. In the most significant categories, faults in care which contributed to the patients' deaths, particularly gratifying reductions took place in 1952. For example, in only 9 per cent was faulty care in labor and delivery contributory to the patient's death as compared to 68 per cent in 1941.

fulminating pre-eclampsia and three of these deaths were considered non-preventable. The fourth followed severe pre-eclampsia of at least three weeks duration. Both deaths due to amniotic fluid embolism were proven at autopsy. The deaths from air embolism followed attempted self-induced abortions. The inclusion of the two

TABLE XII. CARE IN LABOR AND DELIVERY

	1941		1950		1951		1952	
	No.	Per Cent						
Adequate	7	7.8	21	38.9	11	25.5	23	51.1
Faulty, contributory	61	67.8	26	48.1	23	53.5	4	8.9
Faulty, not contributory	22	24.4	7	13.0	9	21.0	18	40.0
None	22		14		14		13	
Totals	112	100.0	68	100.0	57	100.0	58	100.0

TABLE XIII. POSTPARTUM CARE

	1941		1950		1951		1952	
	No.	Per Cent						
Adequate	4	4.8	18	37.5	14	42.4	16	55.2
Faulty, contributory	67	79.8	27	56.3	15	45.5	9	31.0
Faulty, not contributory	13	15.5	3	6.2	4	12.1	4	13.8
None	28		20		24		29	
Totals	112	100.0	68	100.0	57	100.0	58	100.0

TABLE XIV. AUTOPSIES

	1941		1950, 1951 & 1952	
	No.	Per Cent	No.	Per Cent
Obtained, adequate	9	8.0	71	38.8
Obtained, inadequate	27	24.1	6	3.3
Not requested	55	49.1	70	38.3
Permission refused	21	18.8	36	19.6
Totals	112	100.0	183	100.0

Causes of Death

The primary causes of death are listed in Table XV. Significant of the trend in obstetrics in Minnesota is the fact that over 40 per cent of the deaths associated with pregnancy or the postpartum state were due to non-obstetric causes. The fact that poliomyelitis accounted for as many deaths as hemorrhage, the leading "obstetric" cause of death, seems particularly noteworthy. The data in the table are largely self-explanatory. The deaths due to hemorrhage in the past three years are considered in a subsequent paragraph. Of the patients who died of toxemia in 1952, two had hypertension preceding the pregnancy. One of these died undelivered of a probable cerebral vascular accident and the other died of uremia three weeks postpartum. Four others died of eclampsia. The eclampsia followed very

TABLE XV. PRIMARY CAUSES OF MATERNAL DEATHS IN MINNESOTA, 1952 STUDY

Cause of Death	No.	Per Cent
Hemorrhage	11	19.0
Toxemia	6	10.3
Amniotic fluid embolism	2	3.5
Air embolism	2	3.5
Heart disease	2	3.5
Acute pulmonary edema	1	1.7
Septic abortion	1	1.7
Dehydration and electrolyte imbalance	1	1.7
Choriocarcinoma	1	1.7
Probable pulmonary embolus	1	1.7
Acute hepatitis	1	1.7
Unknown	4	7.0
Non-obstetrical complications	25	43.1
Bulbar poliomyelitis	11	
Trauma	4	
Intracranial hemorrhage	3	
Brain tumor	2	
Leukemia	1	
Suicide	1	
Obstruction trachea	1	
Acute glomerulonephritis	1	
Thrombocytopenic purpura	1	
Totals	58	100.1

deaths associated with heart disease in the "obstetric" group might be questioned because one died of congestive failure from hypertensive heart disease three months postpartum and the other died of cardiac arrest at surgery for ligation of a patent ductus arteriosus fourteen weeks postpartum. The three deaths listed in the non-obstetric complications as due to intracranial hemorrhage apparently bore no relationship to the pregnancy. None of the three had toxemia. Two deaths oc-

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TABLE XVI. CAUSES OF "OBSTETRIC" DEATHS AND PERCENTAGE DISTRIBUTION OF DEATHS CONSIDERED PREVENTABLE IN 1950, 1951 AND 1952

	No.	Per Cent	Preventable	Per Cent of Preventable Deaths
Hemorrhage	33	28.0	25	44.6
Toxemia	23	19.5	8	14.3
Infection	8	6.8	3	5.4
Anesthesia	7	5.9	6	10.7
Pulmonary embolism	7	5.9	0	0.0
Others	40	33.9	14	25.0
Total	118	100.0	56	100.0

curred during pregnancy and one on the day of delivery.

The leading cause of death for the second consecutive year and for the third of the four years of the study was hemorrhage and shock. It is quite apparent that it is here that the greatest opportunity for improvement in the mortality rate lies. Hemorrhage is far and away the greatest cause of preventable deaths (Table XVI). It accounts for more than three times as many of these as the next leading cause.

Delivery of patients by accouchement forcé and improper use of pituitary extract during labor are two well-recognized means of inviting trouble. These two accounted for one-third of the deaths due to hemorrhage in the past three years (Table XVII). There is no indication whatever for accouchement forcé. In no instance in which its application led to the patient's death could any justification for the procedure be found. Forceful dilatation of the cervix and forceps deliveries were often carried out in acute emergencies during labor in the unthinking and obviously false belief that delivery of the patients would accomplish something to ameliorate the situation. One patient developed premature separation of the placenta and severe shock during labor. Without any preliminary shock treatment she was anesthetized with chloroform, the cervical dilatation was completed manually and mid-forceps extraction was done. The patient expired from hemorrhage and shock in less than two hours. In another instance cervical dilatation from five centimeters was completed manually followed by a difficult forceps rotation and extraction because of "epilepsy." This patient died of hemorrhage approximately eight hours later. One patient with placenta previa at thirty-one weeks gestation, another with toxemia and a third with probable premature separation of the placenta were delivered by

TABLE XVII. ANALYSIS OF DEATH DUE TO HEMORRHAGE, 1950, 1951 AND 1952

	Number	Per Cent
Ruptured uteri and lacerations of cervix	15	45.5
Accouchement force	6	
Pituitary extract	5	
Others	4	
Postpartum atony	8	24.2
Retained placenta	3	9.1
Premature separation of placenta	2	6.1
Ectopic pregnancy	2	6.1
Others	3	9.1
Totals	33	100.1

accouchement forcé. All died of hemorrhage. In still another instance a patient was making good progress after eighteen hours of labor when for no understandable reason the physician undertook to complete the dilatation manually and deliver the infant by means of a mid-forceps extraction. This patient died of hemorrhage thirteen hours later.

The abuse of pituitary extract during labor led to five deaths. Two of these resulted from severe lacerations of the birth canal from which patients bled to death while the other three developed frank ruptures of the uterus. In general, the indications for the use of the oxytocics was either inadequate or non-existent. The recognized rules relating to the safe methods of administering pituitary extract were violated in each instance. In the only case in which the pituitrin was given in dilute solution by continuous intravenous drip, the patient was a para 8. The danger of intramuscular use of pituitary extract in any quantity is indicated by the case of a patient who developed a precipitous labor and severe vaginal and cervical lacerations following administration of only two doses of pituitrin of 1 minim each. The patient died of hemorrhage.

Another large group of deaths due to hemorrhage is made up of those resulting from post-partum uterine atony. In this group there was, in general, failure to anticipate hemorrhage in instances of prolonged exhausting labor, difficult forceps deliveries; after deep anesthesia, in the presence of twins or hydramnios and at cesarean section. Treatment was inadequate. Probably the single most effective means for correcting or preventing postpartum hemorrhage due to atony is the administration by continuous intravenous drip of a dilute pitocin solution. This was not used in a single case in this group. The situation was often aggravated by the use of general anesthesia to examine the generative tract or to

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insert packing. Such anesthesia was not necessary. The utero-vaginal tract was usually inadequately exposed and explored, and packing, when it was used, generally simply obscured the true situation. Packs were used in eight instances in this series of deaths due to hemorrhage and in not one did it serve to arrest the hemorrhage. There was frequently failure to appreciate the true emergency nature of the situation and to secure adequate help.

One other fact stands out when deaths due to hemorrhage are considered. Blood is now so widely available that adequate amounts were on hand in all except two instances. However, in all except three instances the blood administered was given too late and/or in inadequate amounts.

Summary and Conclusions

1. A brief general summary of the results of the Minnesota Maternal Mortality Study for the period April 1, 1952, through March 31, 1953, has been presented. Certain comparisons are made between these results and those of similar studies done in three previous years in Minnesota.

2. There were fifty-eight deaths associated with pregnancy or the postpartum period in the 1952-1953 period among 78,990 live births for an over-all maternal mortality rate of 0.73 per 1,000 live births. The rate when deaths due to non-obstetric complications are excluded was 0.42. This is almost identical with the rate for the preceding year.

3. A most remarkable reduction in the proportion of deaths that were considered preventable took place in the past year. Only 17.2 per cent were considered preventable as compared with 42.1 per cent of the deaths in the preceding year and 73.2 per cent of those that occurred in 1941-1942.

4. There was a further increase in the percentage of deaths associated with pregnancy but due to non-obstetric causes from 17 per cent in 1941-1942 to 43.1 per cent in the most recent survey.

5. Approximately the same proportion of de-

livered patients who died were delivered by operative means in the most recent year of the study. However, only 15.8 per cent of the operative deliveries were considered not indicated as compared with 60 per cent in the preceding year.

6. The inaccuracies of ordinarily reported maternal mortality rates and of death certificates is discussed.

7. Complete pelvic measurements were obtained in 45.7 per cent of registered patients who died. Of those incompletely measured, external measurements including the interspinous, intercrystal, intertrochanteric and Baudelocque's diameter were determined in most instances while the much more significant intertuberous and diagonal conjugate diameters were ignored.

8. The primary causes of maternal deaths in Minnesota in the 1952 study are tabulated. Hemorrhage was again the leading cause of death.

9. An analysis of the cause of "obstetric" deaths in 1950, 1951 and 1952 showed that hemorrhage accounted for 28 per cent of the total and almost one-half of the obstetric deaths which were considered preventable. Hemorrhage accounted for more than three times as many preventable deaths as the next leading cause, toxemia.

10. Some of the factors involved in the deaths due to hemorrhage are discussed. The principal ones included accouchement *forcé*, improper use of pituitary extracts during labor, and inadequate and delayed replacement of blood.

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Fractures of the Elbow

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OF THE MAJOR extremity joints, the elbow suffers the greatest from injuries to its surfaces. Since the functions of the upper extremity are largely those requiring dexterity, great demands are placed on this joint to provide a wide range of motion of its articulating parts. The articulation between the ulna and the humerus combines great stability with flexion and extension movement through a range of about 150 degrees. The articulation between the radius and the humerus combines this same range of flexion and extension movement with rotation of about 135 degrees at any point throughout the flexion and extension arc. The stability of the joint is further increased by an articulation between the head of the radius and the ulna.

Study of the anatomical relationships of these various articular surfaces reveals a precision of fit which cannot be disturbed more than a small amount if the motions of the elbow are not to be restricted. A thorough knowledge of the anatomy and functions of the elbow joint is a primary requirement for successful treatment of fractures of this joint. To this knowledge must be added the recognition of the soft tissue damage which occurs with fractures in this region. Particular care must be exercised during the recovery period to prevent this damage from leading to permanent disability. No joint in the body suffers more from overly zealous and injudicious manipulations during the recovery period.

The intelligent treatment of fractures of the elbow must be preceded by x-ray studies of good quality. The interpretation of the x-ray must be based upon exact anatomical knowledge of the bony and cartilaginous parts. The operator must have sufficiently good films and he must study those films carefully so that all displacements are visualized before treatment is begun. Certain of the fractures in this region occur primarily in

youth while others are usually found in adult life. Some of the more common fractures of the elbow will be discussed according to the age group in which they are usually found.

Fractures Occurring Chiefly in Adults

Head of the Radius.—When falling on the outstretched hand, force is transmitted up the shaft of the radius and directed against the capitellum of the humerus. With an added valgus strain, the radial head may yield. In the presence of pain in the elbow with tenderness over the head of the radius and discomfort on pronation and supination movement, a fracture of the radial head must be suspected, and if routine x-ray studies do not reveal a fracture, further films made in varying degrees of pronation and supination should be made. Three degrees of fracture should be recognized:

1. A small marginal fracture with only mild displacement or a moderate sized marginal fracture with no displacement.
2. Marginal fractures with moderate to severe displacement.
3. Comminuted fractures of the head.

The first type of fracture can be treated with the use of a sling and early gentle exercise. Immobilization with a cast or a posterior plaster splint will give some comfort but should be discontinued within a week. Fractures of the second and third types usually unite with deformity of the head and are accompanied by damage to the articular surface of the capitellum and should be treated by excision of the head. If excision is to be undertaken, it should be done within the first few days after the accident and should not be delayed until weeks or months later when it becomes obvious that the end result will be poor. Late excision of the head seldom improves the result. In the treatment of these fractures as well as all fractures of the elbow, passive stretching in any manner must be rigidly avoided since this

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delays recovery and frequently leads to unnecessary permanent loss of elbow movement.

Olecranon.—Fractures of the olecranon with separation require accurate reduction and immobilization until healing is complete. This can sometimes be accomplished by closed method, but the majority of such fractures are best treated by open operation and internal fixation employing wire suture or screws. When a screw is employed, it must engage the cortex of the distal fragment in order to obtain sufficient purchase in the bone. If wire is employed, it should pass through a drill hole in the distal fragment, but through the triceps tendon and immediately proximal to the olecranon fragment and not through the easily fragmented proximal fragment. Both a simple loop and a figure of eight loop should be employed, and the wire should be pulled very tight before twisting. The fixation should be so secure that no plaster is needed after the operation. If a plaster cast is applied, the patient awakening from anesthesia may struggle against the plaster and disrupt the reduction in spite of good technique. This will not take place where only elastic bandaging is used.

Comminuted fractures of the olecranon are usually not suited to either open or closed reduction. Excision of the comminuted fragments and suture of the triceps tendon of the distal fragment leads to good functional result. Instability of the elbow does not result unless the elbow was dislocated anteriorly at the time of the fracture or unless the fragments of the olecranon constitute more than half of the semilunar notch.

Intercondylar Fractures.—"T" and "Y" fractures of the distal end of the humerus commonly display marked rotation of the condyles and separation of the capitellum and the trochlea. If not accurately reduced, proper fitting of the articular surfaces of the radius and ulna is lost leading to considerable disability. These fractures are usually best treated by closed method employing a judicious amount of skeletal traction through the olecranon and molding of the fragments by external manipulation. Open reduction may cause more abundant new bone formation which blocks joint movement and should, therefore, be employed only when necessary and then with a minimum of dissection. The posterior approach gives the best visualization and is the most convenient.

Capitellum.—The force of a fall transmitted upward through the radius may cause the hemispherical capitellum to shear off from the humerus and become widely displaced and free in the joint. This fragment can rarely be accurately replaced by manipulative method, although a single trial is usually justified. Open reduction permits accurate replacement. The pressure of the head of the radius then maintains reduction without the necessity for internal fixation.

Fractures Occurring Chiefly in Children

The proper diagnosis of fractures in children and the assessment of their severity depends upon a knowledge of the ossification centers which are present in the cartilaginous ends of the bones. Without a knowledge of the constant and the inconstant ossification centers about the elbow, serious fractures may be overlooked or a false diagnosis of fracture may be made in a normal elbow. Since many of the fractures of the lower end of the humerus chiefly involve the cartilage at the end of the bone, the actual fracture line may not be visible and the serious nature of the injury not recognized upon casual inspection of the x-ray film. Failure to accurately reduce such fractures commonly leads to greater deformity and physical handicap in adult life than the fracture of the shaft which is permitted to unite in marked angulation. In determining the injury to the elbow of a child, films of the opposite elbow made in the same direction may be exposed and the position and shape of the ossification centers compared.

Supracondylar Fractures.—In the usual type of supracondylar fracture, the distal fragment is displaced and rotated posteriorly. In the lateral x-ray of the elbow, a line drawn through the center of the epiphysis for the capitellum forms an angle of about 40 degrees with the longitudinal axis of the shaft. In this type of fracture, the angle is reduced and the epiphysis may be found to lie in the longitudinal axis or may be displaced posterior to it. Manipulative reduction of the fracture by applying traction and then flexion usually results in a very satisfactory replacement. Immobilization in a flexed position maintains reduction, but the combination of swelling and excessive flexion may lead to ischemia and disaster if not closely attended. If the normal forward tilt of the distal end of the humerus is not accurately restored, there will be loss of either flexion

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or extension movement to the same extent that this reduction fails to approximate the normal. Failure to reduce any angulation seen in the anteroposterior x-ray will lead to the unsightly increase or decrease in the carrying angle of the arm and frequently to tardy ulnar palsy. Residual rotation of the fragments in the axis of the arm may lead to loss of ability to place the hand behind the head or behind the back.

In the more unusual type of supracondylar fracture, the distal fragment is angulated forward. Reduction is accomplished by fully extending the arm and immobilization should be in the same position.

Transcondylar Fractures.—These fractures pass transversely through the olecranon and coronoid fossae. Accurate reduction is essential to avoid bone block and subsequent loss of movement. Closed manipulation similar to that for supracondylar fractures is the method of choice.

Lateral Condyle Fractures.—This fracture line passes largely through cartilage in children and is not seen on the x-ray film. The fragment is commonly rotated up to 90° in the frontal plane and 90° about the longitudinal axis due to the pull of the wrist and finger extensor muscles which attach to the lateral epicondyle. In the presence of this displacement, the anteroposterior x-ray film displays an epiphysis for the capitellum which has the hemispherical shape normally seen in the lateral view. The lateral x-ray film may show the "half pear" shape which is normally seen in the anteroposterior view. When displacement is severe, open reduction is almost always needed. After anatomical replacement of the fragment under direct vision, a suture of catgut is usually sufficient to maintain reduction in the plaster cast. Failure to recognize and accurately replace this fragment results in progressive distortion of the elbow into a position of cubitus valgus and subsequent tardy ulnar palsy.

Medial Epicondyle.—Avulsion of the medial epicondyle may lead to only minimal displacement or to displacements of up to one centimeter. Such

disruptions do not require open reduction but heal satisfactorily with fibrous union. When the elbow is forced into severe valgus and dislocated at the time of injury, the medial epicondyle may drop into the joint where it becomes an obstacle to reduction of the dislocation. Closed reduction may be accomplished at times by increasing the valgus of the arm while tensing the flexor muscle mass by extending and supinating the wrist and fingers. When this does not succeed in withdrawing the epicondyle from the joint, open operation is clearly indicated for replacement of the epicondyle and suture with catgut.

Upper Radial Epiphysis.—The head of the radius does not commonly fragment in children, but the neck of the bone more readily compresses, resulting in a greenstick fracture. At times the fracture may lead to severe tilting of the head. The head fragment with its epiphysis must never be excised in children because the loss of the growth center leads to shortening of the bone, loss of support of the radial side of the wrist and the deformity of a club hand. By placing the elbow under a varus strain and by pressing against the displaced head with the thumb, closed reduction is frequently successful. If manipulation does not succeed and the tilt of the epiphysis is more than of moderate degree, open reduction for accurate replacement is essential. Internal fixation is not necessary since reduction is maintained by pressure of the capitellum.

Summary

Fractures of the elbow must be reduced with special care in order to prevent permanent disability. Thorough knowledge of the anatomy and functions of the elbow joint is prerequisite to intelligent treatment. Accurate knowledge of the number, location, and shape of the ossification centers is essential in proper diagnosis and treatment of elbow injuries in children. Some fractures of the elbow must be treated by early open reduction. Passive stretching adversely effects recovery, but active exercise should be encouraged after immobilization is removed.

Anal Pruritus

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THE controversial subject of anal pruritus has flooded the literature with innumerable theories and thoughts as to the etiology and treatment of this condition. Many of these suggestions have received enthusiastic support initially, and then have gradually been abandoned. Some of the established etiologic factors will be reviewed, stressing the importance of the bacterial flora of the colon and diet as contributing factors in the production of anal pruritus. Recommendations for effective therapy will also be considered.

The anal and perianal skin are unusual in that very little stimulation is necessary to produce a perceptible irritation and the sensation of itching. This portion of the body is richly endowed with sensory nerve endings and physiologically displays a maximum readiness to itch. Longo⁵ has shown that the only other region of the body which has as great a tendency to itch is the meatus of the external ear. In these two hyperirritable areas only minimal stimuli are necessary to produce itching and the consequent desire to scratch. Scratching, infection and prolonged irritation soon result in lichenification which greatly increases the state of hyperexcitability. This produces the vicious scratch-itch cycle which is very difficult to interrupt. This cycle must be broken, and the patient must refrain from scratching if any results are to be expected from therapy.

The gross pathology of the pruritic area is usually characteristic in appearance. Lichenification is usually present to some degree and the more chronic the process the thicker the skin. The normal radiating anal skin folds are usually found to be raised and edematous and often excoriated from scratching. The skin changes, however, depend upon the chronicity of the disease process, the various forms of medication and

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treatment that have been used, and the amount of scratching the patient has done.

Anal pruritus in the vast majority of cases is a *symptom complex* and ordinarily is not produced by any one sole factor. Usually a variety of etiologic factors are combined to produce this state of persistent perianal itching. This condition is a definite pathologic entity and should not be treated lightly. Patients with pruritus should not be dismissed with some ointment or suppository nor should they all be labeled as psychoneurotics as is so frequently done. All the possible etiological factors should be carefully studied in each case to make intelligent and effective therapy possible. First, it is very important to obtain an adequate history in these patients. This should include the duration of the disease process, the time of greatest severity of symptoms, as well as the relation to defecation, baths, menstrual cycles, and ingested food and drugs. Dietary habits and the presence or absence of frequent soft stools are very important. The patient should be asked about the presence of athlete's foot or other skin disease elsewhere on the body. It is also important to determine whether allergic manifestations have been present. Next, a detailed proctologic examination should be done which should include stool examinations for parasites and an estimation of the pH of the rectal secretions. A routine laboratory examination of the urine should be done in all cases to rule out diabetes.

1. *Common Ano-rectal Pathology.* — Local pathological conditions of the anus or rectum which allow leakage of rectal secretions onto the surrounding skin are important etiological factors in anal pruritus. Common conditions such as prolapsing internal hemorrhoids, redundant rectal mucosa, anal fissures and fistulae, hypertrophied anal papillae or fibrous polyps which protrude from the anus *all* allow mucus to

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escape onto the perianal skin. Frequently these secretions are very irritating. On purely a mechanical basis, however, even if the discharge was non-irritating, the constant presence of moisture between the buttocks produces a chafing and maceration of the skin. Usually the chief complaint of patients with protruding hemorrhoids and the like, will be in reference to such symptoms as bleeding and protrusion, but if questioned they usually volunteer the information that periodic episodes of itching occur.

All patients with a moist anus, however, do *not* have a true persistent anal pruritus and this is where the other etiological factors are concerned. This is also the reason why the surgical correction of all existing anal and rectal pathology in cases of pruritus ani will sometimes fail to cure the patient of the troublesome itching. External anal pathology such as skin tags and hypertrophied skin folds are also important since they make proper cleansing of the perianal skin very difficult. A factor which is very frequently overlooked in the production of a moist anus is redundancy of the rectal mucous membrane. This represents excessive looseness of the rectal mucosa in its attachment to the muscularis of the rectal ampulla. A certain amount of mobility of the mucous membrane is normally present, but through constipation, straining at stool, age and general wear and tear, the degree of slack between the layers of the rectal wall greatly increases. The excessive mobility and prolapsing of the rectal lining provokes an irritation and hyperemia of the mucous membrane in and above the internal hemorrhoidal area, which in turn effects excessive secretion of mucus. This mucus puddles above the intact sphincter and intermittently leaks through onto the perianal skin. Obvious anorectal pathology should be corrected surgically. One cannot expect a favorable response to therapy in patients with anal fistulae or pathology of an equally obvious nature which causes the skin to be constantly bathed in moist secretions.

The significance of a vaginal discharge is also frequently underestimated. Anal pruritus is often aggravated by vaginal secretions which run backward over the perineum and many of these patients will also have an associated vulvar pruritus. The leukorrhea causes the sensitive perianal skin and perineum to be kept con-

stantly moist, and with chafing and maceration the skin becomes susceptible to secondary infection. The anal pruritus will not respond properly until the vaginal discharge has been eliminated.

2. Chemical Irritants.—Chemical irritation is probably the most important of the etiological factors involved in the majority of cases of anal pruritus and until recently its importance has been almost completely overlooked. Tucker and Hellwig¹⁵ many years ago reported that the gross and microscopic changes in the skin in anal pruritus were characteristic of a chemical dermatitis. More recently some very important work has been done on the hypothesis of chemical irritation in pruritus which has given us a much more logical basis for the treatment of this condition. Slocumb,⁹ in an exhaustive study of a series of cases of anal pruritus, found that the great majority of these patients had an increased pH of the rectal secretions, and he believed that the pruritus was due to seepage of this alkaline mucus onto the perianal skin. He also found that the increased alkalinity of the rectal contents was directly correlated with the flora of the colon. Through dietary measures he was able to alter the pH of the secretions of the rectum by altering the relative percentages of the Gram-positive and Gram-negative bacteria in the colon.

The second important study was done recently by Friedman, Haskell and Snape² who did microchemical studies on secretions obtained from the anal canal of patients with anal pruritus. They separated their cases into the "moist pruritus," or those in which the affected area was reddened, eroded, macerated and moist, and the "dry pruritus," characterized by marked hypertrophy and thickening of the skin folds. They were able to identify trypsin or trypsin-like enzymes in the rectal secretions of approximately 80 per cent of the "moist pruritus." In another group of patients with non-pruritic anorectal disease 20 per cent were found to have significant amounts of proteolytic enzymes in the rectal secretions. A similar figure (approximately 20 per cent) was obtained in the control group with no gastrointestinal pathology. These investigators believed that the proteolytic enzymes in the secretions leaking out onto the perianal skin was primarily responsible for the skin irritation. This group,

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however, did not indicate whether an elevated pH or increased alkalinity was found.

With these two studies one can come to some very definite conclusions as to the primary eti-

The irritation of the skin in anal pruritus can be compared in a sense with the irritation of the skin of the abdominal wall following ileostomy or colostomy. High concentrations of proteolytic

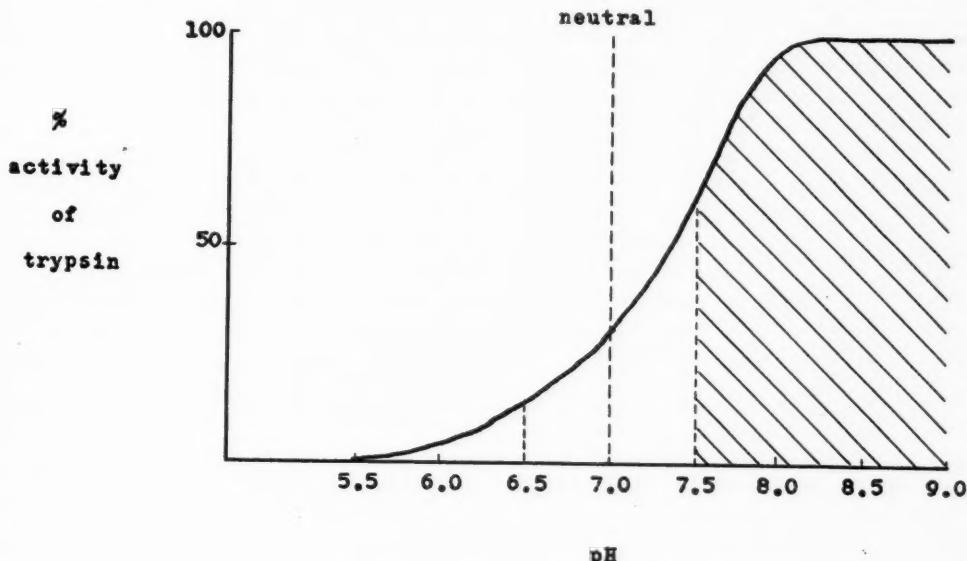


Fig. 1. From *The Journal of General Physiology*.⁶

ology in many cases of anal pruritus, and it is possible to treat the condition in a more intelligent and specific manner. Normally the pH of secretions obtained from the rectum vary from pH 6.5 to 7.5. In the majority of patients with anal pruritus the pH reading will be from 7.5 to 9.0. The prolonged seepage of alkaline secretions onto the perianal skin would in itself be an irritant, but the presence of the proteolytic enzymes is probably more important. Trypsin is most active in an alkaline medium with the maximum enzymatic effect being reached at pH 8.0 (Fig. 1) and this effect is maintained as the alkalinity increases. It will be noted that this is also the pH range of the rectal secretions in the majority of patients with anal pruritus. Trypsin is also mildly active in a neutral or mild acid medium but the activity rapidly and progressively decreases from a maximum at pH 8.0 to complete inactivity at pH 5.5.

Nitrazine paper is used for the purpose of determining pH readings. This is a rather rough method of estimating pH values, but it is accurate enough to definitely determine whether or not increased alkalinity is present.

enzymes are present in the small bowel where they are active in protein digestion. Gradually neutralization of these enzymes occurs in the colon so that usually only minimal amounts can be detected when the fecal material reaches the rectum. In some individuals, for various reasons, inadequate neutralization of these enzymes occurs. We have all experienced a soreness and irritation of the anus following a bout of diarrhea. The increased peristalsis produces liquid stools which allows insufficient time for the neutralization of the proteolytic enzymes. When the diarrheal stool comes in contact with the external skin, the enzymes produce the irritation by a process of digestion. A comparison can also be made with the care necessary to protect the skin about an ileostomy stoma, transverse and sigmoid colostomies. Great care is required to prevent digestion of the skin from ileostomy secretions. Less care is necessary to prevent irritation about a transverse colostomy and with a sigmoid colostomy the skin usually requires little care. Progressive inactivation of the proteolytic enzymes as the fecal mass passes through the colon renders the stools less irritat-

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ing. The irritation produced about artificial abdominal stomas, however, produces a burning sensation rather than persistent itching. A possible explanation for this may be Longo's study⁵ mentioned previously, which showed the marked tendency of the perianal skin to itch. Many patients with anal pruritus will volunteer the information that the itching is severe following a bowel movement. The increased irritation following defecation is usually due to improper cleansing of the anus. Small amounts of stool containing minute quantities of proteolytic enzyme lodge between the radial perianal skin folds and irritate the skin until either the stool is removed or the action of the enzyme is spent. This is the reason why proper anal hygiene is so important in patients with pruritus ani.

Another recent factor in anal pruritus has been the generalized use of oral antibiotics. Aureomycin and terramycin seem to be the greatest offenders but persistent perianal itching is also seen following the use of others. The rectal secretions obtained from pruritic patients who have received these agents are uniformly quite alkaline in reaction (pH 8.0–9.0) and it may be assumed that proteolytic enzymes are also present. The high pH is due to a reduction in the number of the Gram-negative colon bacteria which normally form lactic acid in the intestinal tract by fermentation of carbohydrates.

Rettger⁹ has likened the large intestine to "a veritable culture tube in which definite bacterial types appear to be constantly struggling to gain supremacy." As the colonic flora gradually returns following sterilization of the bowel by antibiotics, an overgrowth of Gram-positive bacteria may occur, which suppresses the growth of the normally predominant Gram-negative organisms. The alkaline contents of the small bowel is then no longer neutralized by the Gram-negative acid-producing colon bacteria, and the fecal mass passes through the large bowel maintaining a high alkaline pH. The inactivation of the proteolytic enzymes is likewise impeded. According to Zinner's *Bacteriology*,¹⁶ the Gram-negative colon bacteria normally constitute about 75 per cent of the intestinal flora, with the Gram-positive rods and cocci forming the remainder of the colonic organisms. Kendall,⁴ Rettger,⁹ and others have proven that definite changes may be brought about in the relative percentages of colon bacteria by

purposefully adjusting the diet. Slocumb's¹⁰ study routinely showed a predominance of Gram-positive instead of Gram-negative bacteria in his patients with elevated mucosal pH and anal pruritus. Through dietary measures he was able to reverse this ratio, and when the Gram-negative bacilli again becomes most numerous, the pH of the rectal secretions also was found to have been reduced to the normal range. With additional supportive measures the anal pruritus disappeared. Recurrences were reported and stool cultures again showed a predominance of Gram-positive instead of Gram-negative bacteria. Individual dietary habits over prolonged periods of time with a resultant change in the flora of the colon may well be one of the fundamental factors in the etiology of anal pruritus. Dietary habits are also the probable explanation for the fact that anal pruritus following oral anti-biotic therapy or otherwise, is rarely seen in children except for those with oxyuriasis infestation.

3. Fungus Infections.—Fungus infections play a definite role in anal pruritus, but they are important mainly as secondary invaders. Terrell and Shaw¹⁵ reported an incidence as high as 60 per cent in cultures taken from the perianal area. Fungi can occasionally be cultured from normal skin but they usually do not grow and produce symptoms unless certain definite conditions are present for their growth. The perianal skin and the interdigital spaces between the toes offer ideal places for active growth of these organisms because of the moisture, heat and improper ventilation of the areas. Another factor which makes the perianal skin particularly vulnerable to fungus infections is the presence of the apocrine sweat glands, or scent glands. These glands produce a secretion having a higher pH, as well as a higher percentage of carbohydrate and protein than is found in ordinary perspiration.

Harry³ and other investigators have stressed the important role played by pH in the defense mechanism of the skin. All the cells of the normal epidermis have an acid reaction (average pH 5.4) which serves as a protection to the skin. As Prinz and Ereaux⁸ stated, "many pathogenic bacteria and fungi are very sensitive to acids, but grow abundantly in a slightly alkaline environment." In rubbing or scratching the perianal skin, if the epidermis is penetrated even to

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a small degree, weeping occurs and the adjacent skin immediately assumes the alkaline pH of blood plasma (pH 7.4). This again offers ideal conditions for the growth of pathogenic bacteria and fungi. The two most common types of fungi involved are the *Monilia* and *Epidemophyton* organisms. Occasionally cases of anal pruritus can be cleared by using fungicidal therapy alone but this is the exception rather than the rule. Usually additional therapeutic measures are necessary to give the patient lasting relief. Some clinical improvement can be expected, however, if the secondary fungus infection can be eradicated or reduced in severity.

4. Allergy.—Allergy is difficult to rule out as a causative factor in anal pruritus. If the patients do not respond to other measures, they are then studied from an allergic standpoint. Elimination diets and skin tests may be employed to attempt to identify the allergen and a therapeutic trial with antihistaminic drugs may be tried. With the introduction of the antihistaminics, allergy was strongly implicated as an etiologic factor and numerous enthusiastic reports were published with very high curative rates. For a period of time these drugs were administered routinely to all patients with pruritus ani, but the results which others had reported could not be duplicated. The use of antihistaminic drugs is now restricted to those cases in which a definite allergic element is present or seems to be present or in those cases where other means fail. Allergy has been definitely established as an etiologic factor in pruritus ani but the number of cases is small.

5. Intestinal Parasites.—These are not major factors in anal pruritus in adults, but pinworm infestation should be considered especially in the night scratchers. Abel¹ has stated that pinworms are the usual cause of anal pruritus in children. Tests to determine the presence of pinworm eggs on the perianal skin should be a routine procedure in adults as well as children, since positive findings are common enough to justify the consideration of their presence. If the pinworm ova are found, the patient should be given adequate treatment with oral gentian violet. The uncomplicated cases will clear up immediately. In adults, however, if oxyuriasis is found in a full blown case of anal pruritus, the presence of

the parasites is probably only contributory and additional methods of treatment will be necessary.

6. Mechanical Factors.—The anal region is constantly being exposed to trauma of one type or another. The passage of hard stools, the use of rough toilet tissue, improperly fitting underclothing which traumatize the area on walking, etc., are all factors. The wearing of a perineal pad during the menses will often irritate the perianal skin and usually is very aggravating to an existing anal pruritus. This group can be readily identified and is but one of the several factors usually involved in producing this condition.

7. Psychogenic Factors.—Stokes¹¹ and others maintain that there are always tension factors in the background of chronic anal pruritus, "the itching being the focal manifestation of a neurotically predisposed skin." They maintain that the patient sets up a vicious cycle of projection of his anxieties upon the perineum. Some authors associated with large clinic groups have considered 90 per cent of the cases of anal pruritus to be a neurodermatitis. In the last edition of Ormsby,⁷ "Diseases of the Skin," anal pruritus is discussed under the neuroses. This is a grave injustice to the majority of patients suffering from this condition. Although it is true that patients with chronic pruritus ani are frequently very nervous, it is often found that as soon as the itching has been alleviated, the degree of nervousness is greatly reduced. While in most cases, nervousness and tension may be contributory in anal pruritus, they do not form the underlying basis for the persistent anal itching. Nervous tension and chronic anxiety may serve to amplify and perpetuate otherwise brief periods of itching by keeping the patient unusually alert or attentive to sensations from the perianal region. Trauma from scratching and the unusual awareness of the condition may start the vicious scratch-itch cycle. Once this cycle has been established therapy is usually ineffective unless the patient can stop scratching the area.

8. Constitutional Disease.—Diabetes is probably the most common constitutional disease with secondary anal pruritus, although other constitutional diseases with skin manifestations may involve the perianal area. Patients with eczema

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and psoriasis should probably also be included in this category. If the diseased perianal skin is only a part of a dermatitis involving other portions of the body, it is fruitless to attempt to treat only the pruritus ani *per se*.

Treatment

1. *General Considerations.*—Patients with anal pruritus should be reassured and told the nature of their trouble at the first consultation. The type of treatment to be used should be carefully explained so that the patient realizes the value of the instructions that are given him. The futility of scratching the area must be stressed, since any additional rubbing or scratching only serves to aggravate the scratch-itch cycle and makes the condition worse. Underwear and trousers should be worn loosely to avoid any additional stimulation. Woolen underwear is especially bad as a mechanical irritant in these people. Women should be instructed to discard girdles and corsets which bind the buttocks tightly together. These foundation garments aggravate the condition by allowing improper ventilation between the buttocks and produce chafing and irritation.

2. *Anal Hygiene.*—The patient must definitely alter the manner used to cleanse the anus after bowel movements. No harsh toilet tissues are allowed since nothing will start the scratch-itch cycle as readily as vigorous rubbing of the anus. The patient is instructed to use a wad of toilet tissue or cotton soaked in water to cleanse the area. The anus should be thoroughly washed with the wet pledges to remove all traces of fecal matter and then dried by blotting with dry tissues.

No soap should be used about the anus, since it is a definite irritant if not completely removed. The alkaline soap also removes the protective oily film and creates an alkaline medium favorable to the growth of secondary invaders. Many patients are instructed to apply vaseline to the skin about the anus before bathing to protect the area from soapy water.

3. *Diet.*—Adherence to a strict diet is most important, at least during the early phase of treatment. A modified acid-ash diet should be followed since in leaving an acid residue it will reduce the excessive alkalinity of the large bowel.

This diet should include those foods which produce lactic acid on fermentation in the intestinal tract. Especially important are dairy products such as cultured buttermilk, yoghurt, cottage cheese and other cheeses. Cultured buttermilk should be consumed in as large quantities as possible. It is sometimes desirable to add beta-lactose to the buttermilk because of its ready fermentation to lactic acid. Bread, cereals of all kinds and spaghetti are other carbohydrates which may be used. Of the fruits, only prunes, plums and cranberries are considered to have an acid residue because of the formation of benzoic acid. Although meat and eggs are considered to be acid-ash foods, Kendall⁴ has shown that the excessive consumption of proteins will promote the growth of the putrefactive flora of the bowel and tends to inhibit the growth of the desirable Gram-negative colon organisms. For this reason a moderate reduction in the consumption of protein is required.

The addition of viable *Lactobacillus acidophilus* organisms to the diet, in one form or another, is also very beneficial. This is done routinely in the postantibiotic cases of pruritus and proctitis. Many forms of these cultures are available, but recently Lactinex tablets have been used with success. These compressed tablets, composed of a combination of viable *L. acidophilus* and *L. bulgaricus* organisms, are consumed with whole milk. Rettger⁵ as shown that the simultaneous administration of lactose and *L. acidophilus* bacteria will replace the putrefactive flora of the colon with an aciduric flora. *Lactobacillus acidophilus* organisms will also establish residence in the colon. It is not possible to secure implantation of *Lactobacillus bulgaricus* in the bowel, which is the organism most commonly used in the production of cultured buttermilk. Although the action of *L. bulgaricus* is transient, with prolonged use it also enhances the growth of the desirable Gram-negative bacteria by also forming lactic acid on fermentation of carbohydrates.

Foods which produce an alkaline residue should be restricted. These include fruits and leafy vegetables in general, with the exception of the fruits mentioned above. Citrus fruits are very common offenders. They greatly increase the alkalinity of the stool and even the moderate use of orange juice and grapefruit juice may aggravate an anal pruritus. Peppers and heavily spiced foods should be omitted because of the irritant

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effect on the digestive tract. Alcohol is another offender, and beer should be completely restricted if there is a tendency toward the production of soft stools. This dietary regime is starchy and not too tasty but the patients seem to tolerate it quite well.

4. *Rectal Irrigations.*—Slocumb¹⁰ advocated the use of a mild lactic acid solution for rectal irrigations. He found lactic acid to be more effective than dilute hydrochloric or boric acid in maintaining a pH of about 6.5 in the rectal ampulla. The purpose of this irrigation is twofold. First, it reduces the alkalinity of the rectal ampulla by neutralizing the alkaline secretions and, secondly, it cleanses the rectum of any stool and mucus which may be present. It will be recalled that Friedman et al² found proteolytic enzymes in the rectal secretions of a large percentage of patients with anal pruritus. The washing away of these enzyme containing secretions is probably the greatest function of the irrigations. Slocumb⁴ recommended that this irrigation be used once daily.

A modification of this technique has been found to be more effective in some cases. One pint of a .15 to .20 per cent lactic acid solution is used as a rectal douche. This solution can be easily prepared by adding one teaspoonful of a 20 per cent lactic acid solution to a pint of tap water. The frequency of the irrigations or low enemas depends upon the acuteness of the individual case. In patients with a moist, red and eroded perianal skin it has been found advantageous to use the irrigation three or four times daily until the acute symptoms have begun to subside. Local applications and supportive treatment must, of course, be used along with the cleansing acid enemas. The average chronic case of anal pruritus is instructed to irrigate himself twice daily at the onset of therapy. After a period of time when the itching subsides and the skin has begun to approach the normal, the irrigations may be reduced to once daily, once every second day, and then discontinued if the patient will adhere to the acid-ash diet. If dietary indiscretions cause a recurrence of the itching, the patients are told to resume the irrigations until the symptoms again subside. These lactic acid irrigations are not a "cure-all" for anal pruritus, but it has been found to be one of the most effective methods of therapy at our

disposal, giving more benefit to a greater number of patients than any other single method of treatment.

5. *Local Applications.*—In the very acute types of pruritus with the typical red, weeping skin nothing is more beneficial or gratifying than the use of cold moist packs. Usually a 1:10 Burow's solution or 1:4000 potassium permanganate is used. The potassium permanganate has the advantage of also being effective against the secondary fungus infection which may be present. In the acute type of case the application of ointments usually only serves to aggravate the condition. A mechanism which will quickly bring relief from severe itching is the application of an ordinary ice collar to the perineum, holding it in place with a belt or T-binder. This may be used in conjunction with the cold moist packs. The maintenance of subnormal temperatures anesthetizes the nerve endings and very soon stops the itching. This is a very useful procedure which should be explained to the patients.

The majority of the cases of anal pruritus which are seen have been grossly overtreated. In an effort to stop the itching the patient has usually tried numerous home remedies and proprietary medicines. The majority of medications sold across the counter in drug stores contain symptomatic antipruritics in excessively high concentrations. The effectiveness of these preparations in controlling the itching soon wears off and a secondary irritation is produced which eventually makes the condition worse. In general it may be stated that the mildest medications which will give the patient relief will ultimately give the best results.

New preparations are constantly being introduced for the treatment of anal pruritus; however, some of the old time-worn remedies which have generally been discarded have not lost their excellent qualities. Unna's Soft Zinc Paste (pasta zinci mollis U.S.P.) has been found to be one of the most effective preparations available, forming an excellent water-repellent protective application. Because of the mildness of this paste it may be used indefinitely to protect the perianal skin.

Fungicidal therapy is indicated if the pruritic skin appears to be complicated by a fungus infection. As stated previously, most mycotic infections in anal pruritus are secondary and

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additional therapeutic measures are necessary, but improvement can be expected if the fungus infection can be eradicated or reduced in severity. Mild preparations of gentian violet, malachite green, Castellani's paint, and other dyes have been used, and all are quite satisfactory for local application. The fatty-acid fungicidal preparations (Desenex, Sopranol, etc.) have also been used. The commercially available preparations of these fungicides, however, are far too strong for use on the sensitive perianal skin. They should be diluted to one-half or one-third their initial strength with an appropriate ointment base. Tar preparations are often quite valuable in the treatment of chronic cases with lichenification of the skin. They are usually used in strengths of 2 to 5 per cent. The tar ointments are generally effective in reducing the chronic inflammation and thickness of the skin. Ointments containing local anesthetics are unnecessary in the treatment of anal pruritus. The itching can be stopped with other means and the eczematoid dermatitis often produced by sensitivity reactions to the anesthetic agents can be avoided.

Recently hydrocortisone preparations have been widely used in the treatment of many dermatoses including anal pruritus. In many cases it promptly reduces the inflammation and edema in the involved skin and stops the itching. Local hydrocortisone therapy, however, is no panacea or one-shot treatment for all cases of chronic anal pruritus. Several cases have been seen in which the application of hydrocortisone has made the condition worse. Sulzberger¹³ has reported similar experiences. It is fruitless to expect hydrocortisone ointment, or any other ointment, to be effective in the acute, red, weeping types of anal pruritus. Conventional methods must first be used to relieve the acute inflammatory reaction before local hydrocortisone therapy is attempted. The 2.5 per cent hydrocortisone ointment is much more effective in the treatment of anal pruritus than is the 1.0 per cent preparations. A very small amount of the 2.5 per cent ointment should be applied to the involved area two or three times daily and thoroughly massaged into the skin. In cases where a favorable response occurs, improvement is usually evident within two to three days after treatment is begun. In some cases the itching will stop within a few hours. If no improvement is noted within seven days, the hydrocortisone therapy should be discontinued

since no further beneficial effect can be expected. After the pruritus has subsided, the 1.0 per cent ointment is usually adequate to keep the itching under control, but its daily use is often necessary to prevent recurrences. In the presence of scattered excoriations in chronic cases the addition of Neomycin to the hydrocortisone seems to be helpful in eradicating the secondary infection and promoting more rapid healing of the eroded areas.

Sulzberger¹³ has stated that the therapeutic action of locally applied hydrocortisone is based on a local hormonal action of the steroid itself on the skin. The local effectiveness is also obtained without undesirable systemic effects and no contraindications were found to its continued use on small body areas in a large series of cases.

Hydrocortisone is a valuable adjunct to the treatment of anal pruritus but its use should be combined with dietary changes and other therapeutic measures at our disposal to produce lasting cures. Treating the symptoms rather than the disease as a whole cannot be expected to produce satisfactory long-lasting results.

6. X-ray Therapy.—Local x-ray therapy has been used extensively in the treatment of pruritus ani. It is most effective in the chronic cases with lichenification, and it acts by decreasing the hyperexcitability of the pruritic skin and helps to break the scratch-itch cycle. Many patients will respond favorably to this type of therapy and then become refractory to it. If the x-ray treatments are continued too long a radiodermatitis will ultimately develop. For this reason the indiscriminate use of x-ray should be eliminated. Before resorting to x-ray every effort should be made to control the condition with other means. There are too many patients suffering from both the pruritus and a radiodermatitis. When this unfortunate combination is found, the usual type of therapy is ineffective and radical procedures such as a subcutaneous perianal neurotomy must be used to give the patient relief.

7. Surgical Methods.—The injection of long-lasting local anesthetics beneath the perianal skin is used occasionally to break the scratch-itch cycle when the patient has insufficient will power to keep from scratching. This will stop the itching for a sufficient period of time so that adequate general and local therapy can be effec-

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tively started. Usually an aqueous preparation of Diethane and Benzyl alcohol is used. Fewer complications in the form of slough and abscesses can be expected with this preparation than with the long lasting local anesthetics in oil.

If redundancy of the mucous membrane exists, it may be corrected as an office procedure with the injection of sclerosing solutions, or surgically at the time of removal of other co-existing anorectal pathology. Sclerosing solutions injected into the submucosa promote fibrosis and fixation of the mucosa to the muscularis. Usually five per cent phenol in olive oil is used for this purpose although other sclerosing solutions are also effective. If the injections are carefully given and intramucosal injections are avoided, sloughs and other complications are quite rare.

Radical operative procedures for anal pruritus, such as Ball's subcutaneous perianal neurotomy, have been abandoned. However, when surgical procedures are done on pruritic patients for the removal of obvious anorectal pathology, the perianal skin is routinely undercut at the same time. Severing the perianal sensory nerve fibers at this time is a relatively simple procedure, and it does not prolong the healing period. If the undercutting is thoroughly done, the patient will be completely relieved of any itching until sufficient time has elapsed for the nerve fibers to grow back. This usually requires several months during which time adequate measures can be taken to

treat the skin and otherwise restore normal physiology to the area.

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HEARING LOSS IN CHILDREN

(Continued from Page 8)

Day schools for the hard of hearing are maintained in Minneapolis, St. Paul and Duluth.

Speech clinics are available at the University of Minnesota, the University of Minnesota at Duluth, St. Cloud State Teachers College, and Moorhead State Teachers College.

The Minnesota School for the Deaf at Faribault is a state-maintained boarding school for hearing-handicapped children. Its enrollment is limited.

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Carcinoma of the Common Duct

Report of Two Cases

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ACCORDING to Renshaw, Durand Fardell first described carcinoma of the common duct in 1840. Since that time numerous authors have reported small series of cases. Kirshbaum and Kozell² reported thirty-two cases in 13,330 consecutive autopsies at the Cook County Hospital. Niebling⁴ found sixty cases in 14,000 operations on the biliary tract and 12,000 autopsies at the Mayo Clinic. McGlinn³ found five in 9,000 routine post-mortem examinations and Glen and Davis¹ report three from the New York Hospital from 1932 to 1951. From these series it is readily seen that the disease is relatively infrequent even in the larger medical centers. For this reason it seemed to me that two cases occurring within three months time in a small community hospital would be of interest to the practicing physician. Of further interest is the fact that only 345 operations on the biliary tract were performed during the years 1949 through August 1954. No other cases were found during this period.

The sex distribution of carcinoma of the common duct is found to be more equal than in carcinoma of the gall bladder with most authors reporting a slight preponderance on the male side. Also, in contrast to gall bladder carcinoma, biliary calculi are found to be present less frequently, but they do occur in about fifty per cent of the cases. This is still a rather high incidence and for this reason many authors suggest a possible etiological relationship between biliary calculi and carcinoma of the bile ducts. Other workers, notably Boyd, Barlow, and Dick⁴ have pointed out the similarity of normal bile constituents to known carcinogenic agents.

The clinical manifestations of carcinoma of the common duct are indistinguishable from any other obstructive type of jaundice. The most common manifestation is a progressive jaundice

usually without pain although pain does occur with surprising frequency. The jaundice is accompanied by acholic stools, anorexia, weight loss, and pruritus. In one of our two cases the patient had no complaints other than jaundice and pruritus. In various series a palpable gall bladder was present in only thirty per cent or less of the cases. The carcinomas are predominately adenocarcinomas with the infiltrating type most prevalent in the common duct. Microscopically three general types are noted: (1) scirrhous, (2) mucous, and (3) a papillary type. Metastasis occurs early both regionally and at a distance and recurrence following surgery is common.

The early diagnosis of these tumors is difficult and seldom made. In fact, the exact preoperative diagnosis is usually obscure and it remains for laparotomy to disclose the type of obstruction. Consequently many of these tumors are discovered unexpectedly or in a late phase when regional and distant spread has occurred beyond any possible hope of surgical cure.

Palliative surgery to relieve the jaundice and its complications and pain has not been encouraging.

Local extirpation of the lesion followed by reconstruction of the bile ducts has been tried with varying success. It is distressing to report that both of these cases died, one surviving her surgery for a period of two months. It is to be hoped that with the further development of radical surgical techniques and of the biochemical anti-carcinogenic armamentarium more long-term survivals will be effected.

With these brief remarks on the disease itself, I should like to present two cases of carcinoma of the common duct occurring at the Winona General Hospital within a three-month period. Both cases presented the classical picture of jaundice and in neither case was the diagnosis made preoperatively.

Case 1.—A seventy-two-year-old white woman was first seen November 23, 1953, complaining of jaundice.

Awarded Southern Minnesota Medical Association Medal for best case report submitted at the annual meeting, Winona, Minnesota, September 13, 1954.

CARCINOMA OF THE COMMON DUCT—FINKELNBURG

She gave a history of weight loss, anorexia, and tiredness, of one month's duration. Her husband had noticed the yellow discoloration of her skin. She gave no history of nausea, vomiting, or pain. Her general health was always good and she gave no history of having had any type of infection within the past year.

Physical examination revealed a well-developed, well-preserved white woman who was markedly jaundiced. Examination was essentially negative except for the abdomen. There was spasm of the entire right rectus muscle with the sensation of fullness in the right upper quadrant of the abdomen. No definite mass could be outlined. Pelvic and rectal examinations were essentially negative.

Laboratory examination at the time of the admission to the hospital revealed the hemoglobin to be 12.5 grams, red blood count 3,800,000, white blood count 7,200 with 76 per cent polymorphonuclears and 24 per cent lymphocytes. The plasma proteins were 6.05 grams, thymol turbidity 3.9 units, and the prothrombin time 17.2 seconds with a control at 12.2 seconds. The cephalin flocculation test was negative in twenty-four hours and one plus in forty-eight hours. The total serum bilirubin was 12.6 mgm. per cent and the urine urobilinogen was negative in a one to ten dilution. The stool was negative for occult blood.

X-ray examination of the chest revealed no evidence of intrathoracic pathology. Examination of the upper gastro-intestinal tract by means of a barium meal showed a small ulcer in the first portion of the duodenum and distortion of the duodenum by an extrinsic mass. A diagnosis of obstructive jaundice most probably malignant in origin was made and the patient was prepared for surgery.

The patient was operated upon on December 7, 1953. At laparotomy, the gall bladder was found to be markedly distended. The upper portion was thin-walled whereas the lower half was thick-walled and firmly attached to a mass located at the junction of the cystic and hepatic ducts. The hepatic ducts proximal to the mass were markedly dilated. The intrapancreatic portion of the common duct was of normal caliber. Biopsy of the liver near the gall bladder revealed adenocarcinoma. Biopsy of the mass surrounding the common duct also revealed adenocarcinoma. The gall bladder, cystic duct and the mass involving the first portion of the common duct were excised *in toto* and the continuity of the common duct was re-established by primary anastomosis over a T tube.

The patient's postoperative course was quite stormy but she gradually showed a decrease in the amount of jaundice and a slight increase in her appetite. She was discharged with the T tube in place. Her course at home was gradually down hill although she was able to be up and around part of the day and to eat three meals a day. She died on February 19, 1954, following an episode of coffee ground emesis. Her jaundice had cleared at the time of her death. A post-mortem examination was not obtained.

The pathologist's report of the tissue removed at surgery revealed adenocarcinoma of the common duct

with regional infiltration into the liver and gall bladder.

Case 2.—This patient was operated upon by Dr. Roger Hartwich of Winona who very kindly provided the clinical data for this paper. The patient was a sixty-two-year-old white man who was first seen on January 2, 1954 complaining of jaundice and anorexia. He had been well until December 29, 1953, when he had complained of nausea. He had had no vomiting, no abdominal pain, no chills or fever. About one week later he noticed dark urine, light colored stools, and weakness. His past history was essentially negative and there was no history of any *injection* in the past year. He continued to work as a shipping clerk feeling fairly well on a high protein low fat diet. Because of the persistent jaundice and pruritis he was admitted to the hospital on January 28, 1954, for exploration.

Physical examination on admission revealed a well-developed, well-nourished white man who was obviously jaundiced and complained only of severe generalized itching. Entire physical examination resulted in negative findings save for the marked jaundice and evidence of pruritis.

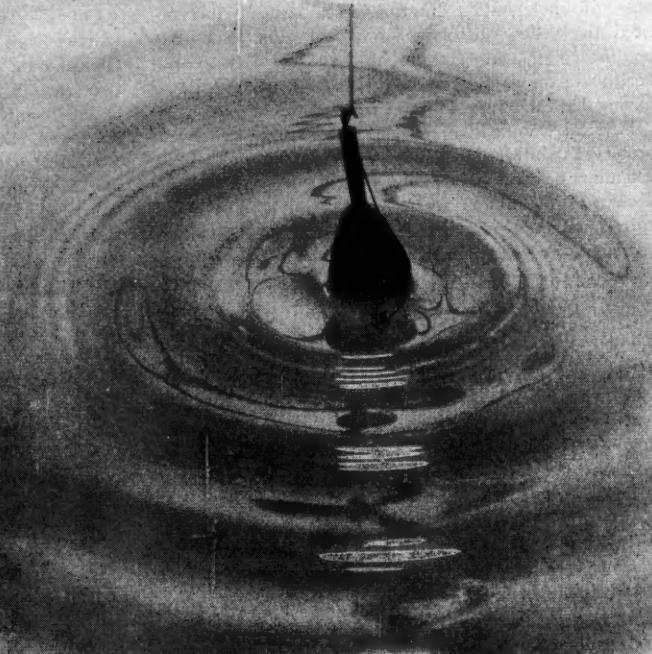
Laboratory examination revealed a hemoglobin to be 78 per cent, the white blood count 6,000 with a normal differential. The prothrombin time was eighteen seconds with a control at fourteen seconds, alkaline phosphatase was 10 Bodansky units, cephalin flocculation one plus in seventy-two hours, and the total serum bilirubin 11 mgm. per cent. A twenty-four-hour stool specimen showed no fecal urobilinogen and the urine was positive for bile. The total protein was 7.4 grams with a normal A/G ratio.

This patient was operated upon February 4, 1954, at which time a mass involving the common duct and cystic duct was found. The tumor mass extended from the junction of the cystic and common hepatic ducts along the entire length of the common duct to the Ampulla of Vater where it stopped. The duct system proximal to the mass was markedly dilated. A biopsy of the tumor was taken which on frozen section proved to be adenocarcinoma. The duct was incised and drainage was established by means of a T tube.

The patient did well following his operation but expired suddenly on his fourth postoperative day. Post-mortem examination revealed a large pulmonary embolus. Examination of the common duct and pancreas at the time of post-mortem examination revealed the common duct completely surrounded by tumor from the Ampulla of Vater approximately to its junction with the cystic duct. The pathologist's final diagnosis was adenocarcinoma of the common duct.

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Retroperitoneal Cavernous Hemangioma Associated with Hemangiomas of the Skin in a Newborn

Case Report and Brief Review of Literature

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HEMANGIOMAS ARE the most common benign tumors of the newborn. They occur most frequently on the skin of the face and the lower extremities. The lesions are often multiple. Rambar¹⁶ reported the occurrence of hemangiomas of the skin in 11.6 per cent of a large group of premature infants. The incidence is believed to be smaller in full term newborns. According to Fitzwilliams⁶ about 16 per cent of individuals with hemangiomas of the skin have multiple lesions. Sometimes, hemangiomas can occur in two different tissues of the same individual. The simultaneous presence of hemangiomas of the liver and spleen or skin and brain has been repeatedly recorded in literature. It is these combined lesions that have given rise to many eponyms and non-descriptive diseases such as Osler-Rendu, Sturge-Webber, and Lindau's etc. Numerous reports of these combinations of hemangiomas have been recorded.

A rare site for these congenital lesions is the kidney. Up to 1951, only seventy-three cases of hemangiomas of the kidney had been reported (McCrea¹¹). Still rarer in occurrence is the presence of hemangiomas in the perirenal retroperitoneal spaces. Only three such cases have appeared in the medical literature up to the present time. The extreme rarity of a retroperitoneal hemangioma is such that no mention of it appears in the standard texts and reference books on pathology. Caffey¹ fails to mention it in the differential diagnosis of abdominal tumors of children. Similarly, Willis²⁵ and Ewing⁵, in their comprehensive treatises on the neoplastic diseases of man take no notice of the possible occurrence of hemangiomas in the retroperitoneal spaces. For this reason, the following case is re-

corded, and a brief review of the literature on this subject is attempted.

Case Report

Baby D, white male, was born at 3:58 P.M. on October 3, 1953. Delivery of the head and shoulders was accomplished without difficulty, but there was some delay in releasing the hips.

Physical Examination at birth revealed the following positive findings:

1. The abdomen was distended by a large oval mass which could be palpated in the right lower quadrant and flank. The mass appeared to extend down into the right pelvis.
2. Bilateral hydroceles of both testes.
3. Two dark strawberry colored tumors, each measuring four centimeters in diameter, were seen, one on the upper lateral aspect of the right thigh, and the other on the skin over the right patella. A firm subcutaneous mass measuring two centimeters in diameter was also found in the right lateral surface of the thigh.

Family History.—Non-contributory.

Laboratory Data.—Examination of the blood revealed a positive Coomb's test, a hemoglobin of 10 Gm. with an erythrocyte count of two million. Many normoblasts in ratio of 8 per cent of the erythrocytes were present. Transfusion via the umbilical cord was carried out. Four hundred and eighty-five cc. of blood was withdrawn, and 556 cc. of whole blood was injected along with 5 cc. of calcium gluconate. The excess of blood was given because of the low initial erythrocyte count. This procedure was well tolerated.

Fig. 1. (upper left): Scout film of the abdomen. Note the large soft tissue mass in the right lower quadrant pushing the gas filled loops of intestine to the left.

Fig. 2. (upper right): Spot roentgenogram obtained during examination of the colon by means of barium enema. Forward and medial displacement of ascending colon is demonstrated. Note also the dye-filled pelvis and calyces of both kidneys.

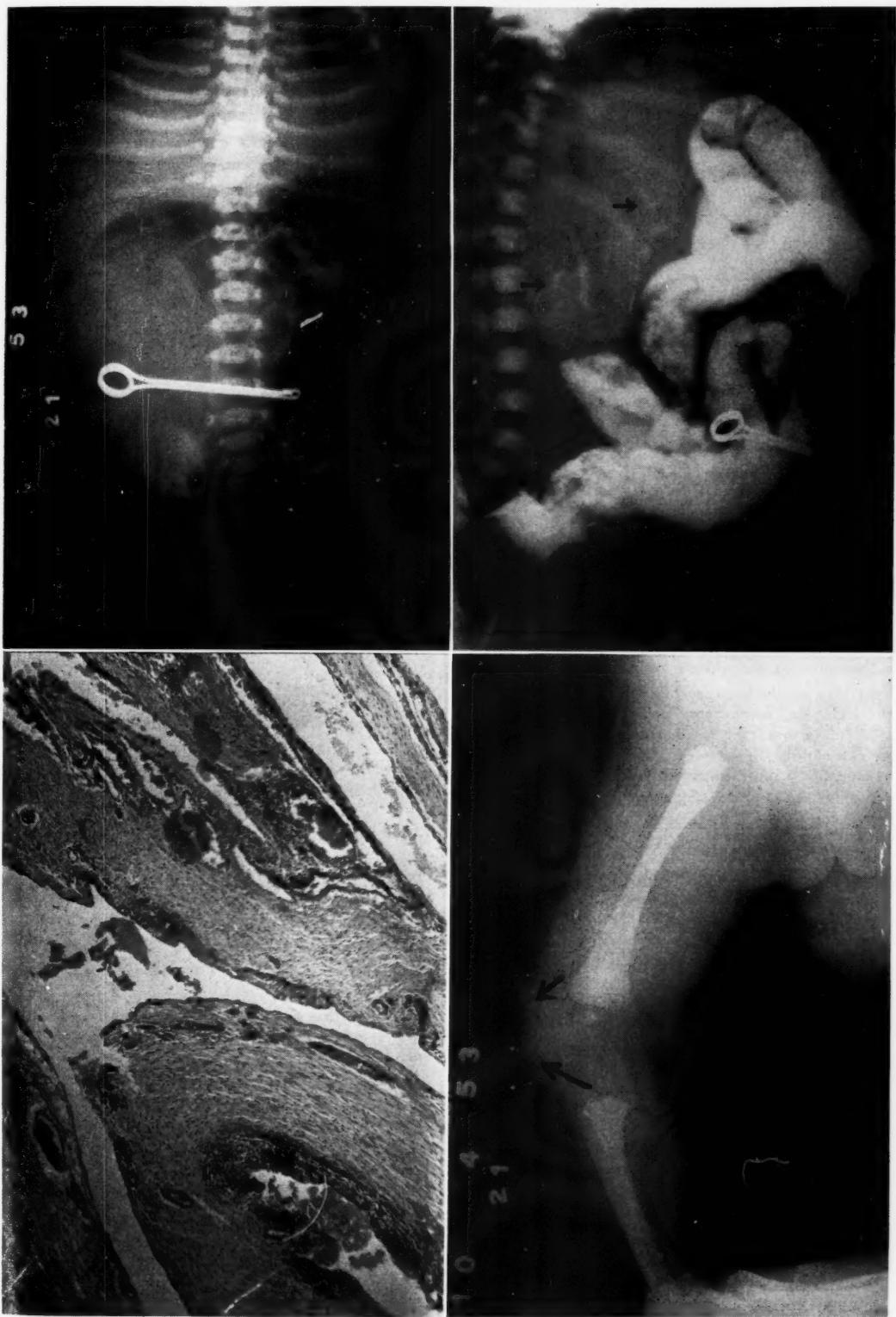
Fig. 3. (lower left): Photograph of the microscopic section of the tumor. Note the cavernous blood spaces. Similar picture was seen in the section of the nevi of the skin on postmortem examination.

Fig. 4. (lower right): Arrows point to minute calcific densities in the nevus over the right patella.

From the Department of Radiology, Ancker Hospital, Saint Paul, Minnesota.

Dr. Aurelius is Chief of the Department of Radiology, Dr. Peterson is Associate Radiologist, and Dr. Niknejad is University of Minnesota Fellow in Radiology, at Ancker Hospital, Saint Paul, Minnesota.

RETROPERITONEAL CAVERNOUS HEMANGIOMA—AURELIUS ET AL



Roentgenological Examination.—The initial scout film of the abdomen (Fig. 1) revealed a soft tissue mass in the right lower quadrant. The mass appeared to displace the normal gas containing loops of large and

Surgical Pathology Report.—The specimen consisted of a mass of tissue measuring 9 by 7 centimeters in its broadest dimensions and 2 cm. in thickness. On section, the tissue was composed of tortuous dilated venous



Fig. 5. Antero posterior and lateral roentgenograms of the skull show no evidence of metastasis.

small intestines to the left. There was no radiological evidence of intestinal obstruction. A roentgenogram of the right leg showed soft tissue masses which were noted on physical examination. In addition, definite calcification was noted in the tumor over the right patella. Examination of the skull disclosed a normal calvarium with no evidence of metastasis.

In view of the presence of multiple hemangiomas of the right leg, it was postulated that the mass in the right lower quadrant could also represent a lesion of similar nature. Study of the genito-urinary tract, and examination of the colon for better evaluation of the abdominal mass were suggested. These were carried out on the following day. About 5 cc. of the urographic contrast medium was injected into the subcutaneous tissues of both buttocks. Roentgenograms obtained subsequently showed a normal urogram on the left. No contrast medium could be elicited in the right kidney. At this time, on the insistence of the surgical staff who were anxious to do an exploratory laparotomy as soon as possible, further follow-up urographic studies had to be abandoned. However, films taken during the examination of the colon, which was performed subsequently, fortuitously revealed normal urograms bilaterally (Fig. 2). It was then assumed that the retroperitoneal mass in the right lower quadrant was probably separate from the right kidney, or at least did not involve its collecting system. Thus, the previous impression with regard to the nature of the lesion was confirmed. Incidentally, the barium enema showed medial displacement of the ascending colon.

Findings at Laparotomy.—A mass of tissue measuring 9 x 7 x 2 cm. was found in the right retroperitoneal space which surrounded the anterior aspect of the right kidney, but did not invade it. A line of cleavage could easily be made between the tumor and the right kidney. The inferior portion of the mass extended to the right pelvis.

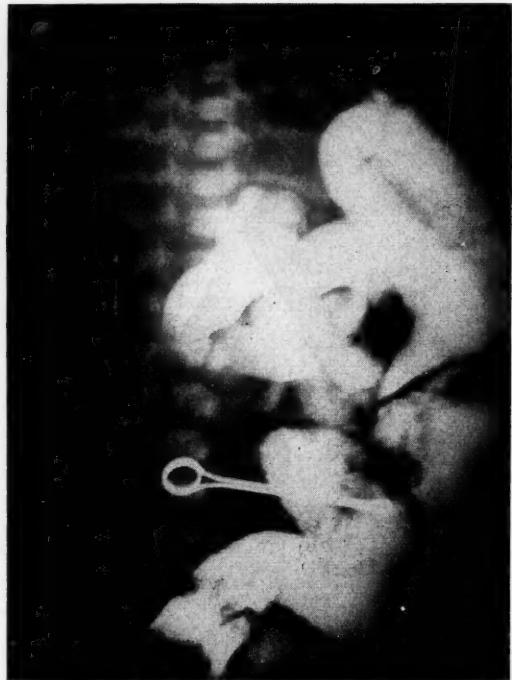


Fig. 6. Barium enema shows marked displacement of the cecum and ascending colon to the left produced by the soft tissue mass in the right retroperitoneal space.

spaces filled with clotted blood. The largest of these spaces measured 3 cm. in diameter.

Microscopic Description.—Sections of the tumor showed it to be composed of cavernous blood spaces many of which contained red blood cells (Fig. 3). There was no evidence of malignancy.

Pathological Diagnosis.—Cavernous hemangioma of the abdomen.

Postoperative Course.—The infant tolerated surgery well, and was returned to the recovery ward in fair condition. However, about three hours later, his respiration ceased. Artificial breathing and cardiac stimulants failed to revive the infant.

Post-mortem Examination disclosed atelectasis of both lungs. Microscopic study of the lesions of the skin revealed cavernous hemangiomas. No other finding of note was observed.

Discussion

Watson and McCarthy²⁴ studied a series of 1,056 cases of angiomas of the skin. Some of these cases had multiple lesions. Of this latter

RETROPERITONEAL CAVERNOUS HEMANGIOMA—AURELIUS ET AL

TABLE I. CLINICAL SUMMARY OF THE PRESENT CASE AND THE THREE PREVIOUSLY REPORTED CASES OF RETROPERITONEAL CAVERNOUS HEMANGIOMA

Age	Sex	Symptoms	X-Ray Findings	Diagnosis Made	Associated Lesions and Fate of Patient	Case Reported By
59 yrs.	White Male	Dull aching pain in the left flank	"Slight displacement of the left ureter toward mid-line, distortion of the pelvis and calyces due to changed axis of the kidney and apparent distortion of the kidney substance in the lower pole . . ."	After Operation	Cardiac enlargement and murmur Patient died suddenly on 10th postoperative day (no autopsy)	Harris ⁸ 1929
32 yrs.	White Male	Generalized abdominal pains of six months duration	"Barium sulfate enema showed the cecum and ascending colon displaced obliquely as far as, and even somewhat beyond the mid-line."	After Operation	No associated lesions. Patient survived surgery and apparently cured	Millman ¹³ 1944
5 mos.	White Male	Rectal Bleeding	Barium enema negative	After Operation	Two hemangiomas, one overlying the right buttock and the other over the mid-sacral crest. Patient died during surgery.	Ward and Stewart ²³ 1950
Newborn	White Male	Right abdominal mass discovered on physical examination (no symptoms)	Scout film of the abdomen and barium enema showed a large soft tissue mass in the right lower quadrant displacing the cecum and loops of small intestine medially.	Diagnosis suggested prior to operation	Three hemangiomas of the right thigh over the approximate distribution of cutaneous branches of L4. Died about three hours after operation.	Aurelius et al.

group, two had associated hemangiomas of the viscera. One had a hemangioma of the right kidney, and the other had a hemangioma of the sigmoid colon. Dean and McCarthy⁴ state that "hemangiomas of the unusual location or extent are often part of a larger congenital pathologic complex." The validity of this statement is attested by the present case and the case reported by Ward and Stewart.²³ In both of these patients, the retroperitoneal cavernous hemangiomas were part of a diffuse similar process involving an extremity. Furthermore, Dean and McCarthy⁴ call attention to the possibility of a vascular tumor of the viscera in patients with multiple hemangiomas of the skin who have bleeding of an undetermined origin.

The first retroperitoneal cavernous hemangioma was reported by Harris⁸ in 1929. Since then, only two additional cases have appeared in the medical literature.^{13,23} Stout¹⁸ mentions a case reported by Hilse¹⁰ in 1929. This, however, was actually a retroperitoneal lipoma which had areas of cavernous hemangiomas within it. This tumor recurred following surgical removal. The case of bilateral cystic lymphangiomas of both kidneys which was reported by Dasco³ cannot be classified as hemangiomas. Retroperitoneal cavernous hemangiomas of the connective tissues of the pelvic floor have also been recorded by Frank⁷ and Tapfer and Just.¹⁹

For the sake of brevity, the clinical history, and roentgenological findings of the four reported cases of retroperitoneal cavernous hemangiomas have been outlined in Table I.

An analysis of this table discloses an apparent

predominance of these lesions in the male. However, in view of the small number of reported cases, no definite conclusion is warranted. To our knowledge, no sex affinity has been observed in the large reported series of the hemangiomas of various locations. Greater incidence of hemangiomas of the skin of the premature white infants as compared with negroes has been noted by Rambar.¹⁶

Due to the rarity of the visceral hemangiomas, the diagnosis is seldom made prior to surgical exploration or post-mortem examination. In the three previously reported cases, the diagnosis was made only after surgery. In the fourth case, which is the subject of the present report, the possibility of a retroperitoneal cavernous hemangioma was suggested because of the presence of several large colored lesions of the skin on the same side of the body on which the abdominal tumor was palpated and demonstrated by the roentgenogram.

Pathogenesis.—The great majority of hemangiomas are congenital in origin and are present at birth. Willis²⁵ believes that "angiomas are not true tumors." He considers them to be congenital malformation originating from embryonic mesenchymal cells which have the ability to proliferate and form blood vessels and also a variety of other tissues as well. Ewing,⁵ on the other hand, maintains that hemangiomas are due to developmental anomalies of certain blood vessels which retain their embryonic characters. Virchow²² attributed the formation of hemangiomas to the action of irritants on imperfectly formed

blood vessels. Thoma²¹ believed that these lesions are the result of mechanical disturbance such as increased blood pressure. A greater incidence of hemangiomas of the skin in premature infants

to the lungs, and lack of derangement of architecture of the right kidney as would be expected from a tumor of this size were against the diagnosis of Wilm's tumor. Sympathicoblastoma was

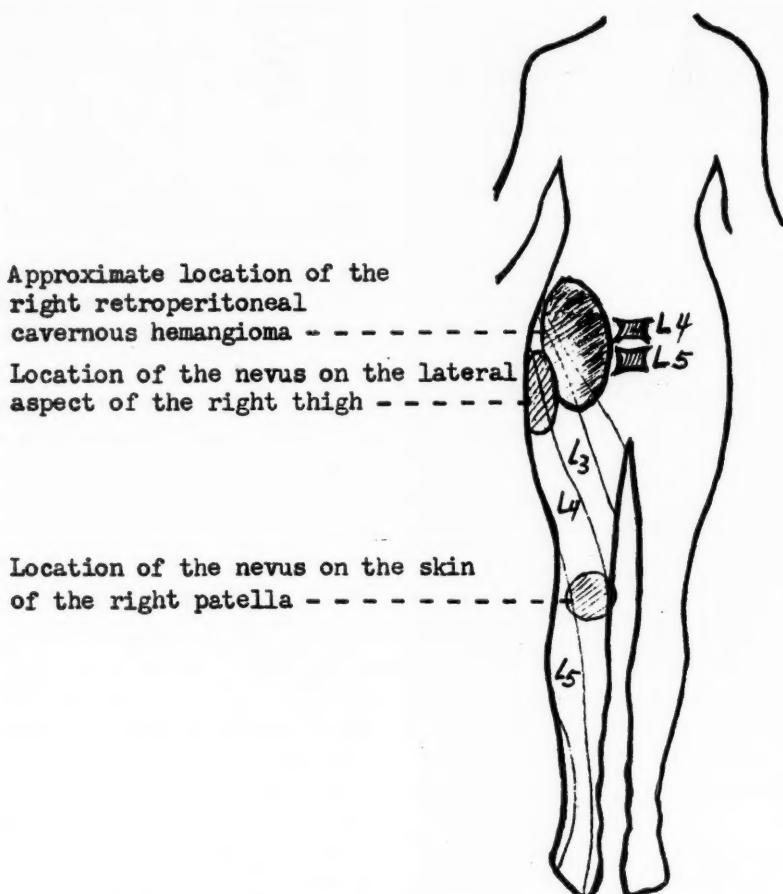


Fig. 7. Diagram of cutaneous nerve distribution of the right leg. Notice the distribution of cutaneous branches of L4, and location of the hemangioma. (Redrawn from J. J. Keegan, Anat. Record, 1948).

in whom the temperature regulating mechanism of the body is defective led Rambar¹⁶ to suggest that there may be a relationship between the development of angioma and the peripheral vascular needs of the infants. Finally Ribbert¹⁷ is of the opinion that hemangiomas have their origin in embryologic rudiments.

Differential Diagnosis.—The possibilities of a Wilm's tumor and sympatheticoblastoma, two of the most common malignant abdominal tumors of infancy, were considered. Absence of metastasis

thought unlikely due to lack of any discernible metastasis in the long bones and in the skull. Since the bulk of the tumor appeared to be located below the inferior pole of the right kidney, the possibility of a supra-renal hemangioma, as recorded by several authors^{12,14,20} was held improbable. Other possibilities that could not be excluded by conventional roentgenographic methods were teratoma, and retroperitoneal hematoma secondary to rupture of a cortical hemangioma of the right kidney. Several instances of the latter occurrence are found in the medical literature.^{2,14}

RETROPERITONEAL CAVERNOUS HEMANGIOMA—AURELIUS ET AL

Likewise, the presence of a retroperitoneal chyle cyst as reported by Gerster⁸ could not be ruled out by the available diagnostic tools.

Distribution.—Thought-provoking conjecture can be made about the interesting distribution of the hemangiomas in our patient. Yakovlev and Guthrie²⁶ in a scholarly analysis of ectodermoses in epilepsy draw attention to peculiar predilection of the angiomatic growths for the tissues of ectodermal origin. They believe that obvious analogies exist between the angiogenesis of the brain and the two other types of congenital ectodermoses, namely, that of Recklinghausen's and Bourneville's diseases. A case of hemangioma of the spinal cord associated with four port-wine nevi of the skin of the corresponding neuromere reported by Cobb is cited²⁶ as "the classical example" of the neuromeric distribution of these lesions. As early as 1911, Fitzwilliams⁶ recognized this distribution and stated: "their extension and growth is intimately connected with the nerve supply of the part." In our case, the location of the retroperitoneal hemangioma opposite to the body of the 4th lumbar vertebra corresponds quite well with the distribution of the nevi which were located in the areas of the right thigh supplied by the cutaneous branches of the 4th lumbar nerve as illustrated in Figure 7.

Thus the presence of hemangiomas of the skin and a study of their distribution may help in the differential diagnosis of a visceral tumor whose nature is not known with certainty.

Summary

A case of retroperitoneal cavernous hemangioma associated with similar lesions of the skin has been presented. The literature on the subject has been reviewed. The association of hemangiomas of the skin with similar lesions in the viscera has been stressed, and their neuromeric distribution has been discussed.

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Facts about Nursing in Minnesota

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IN CONSIDERING our common problem—meeting the nursing personnel shortage—perhaps a few facts and figures will give us a broader understanding of the problem and aid us in finding a new solution. This question of the shortage of nursing service, particularly in hospitals, is not alone the responsibility of nurses, but of doctors, hospital administrators, and other health workers as well.

The solution of our problem most frequently advanced is: "more schools of nursing will produce more nurses." Let us look at the figures (Table I).

TABLE I. PROFESSIONAL NURSING SCHOOLS
(Minnesota State Board of Examiners of Nurses)

	Number Accredited	Student Enrollment
January, 1954.....	23	3,701
" 1949.....	27	2,891
" 1945.....	26	4,601 (peak)
" 1944.....	26	3,539
" 1939.....	27	2,866
" 1934.....	45†	2,359

†11 Schools were in process of closing.

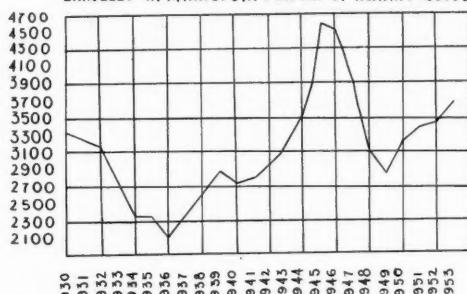
In 1934, there were forty-five accredited schools of professional nursing with 2,359 students enrolled. As the number of schools has decreased, the number of students enrolled has increased. In 1954, there were twenty-three accredited schools with 3,701 students enrolled. During the years 1943-1948, the United States Public Health Service through the U. S. Cadet Nurse Corps program financially supported Nursing Education and that is the reason for the increased enrollment shown for the year 1944-1945.

The total number of freshman, junior, and senior students enrolled in Minnesota schools of nursing shows a steady increase since 1936 to 1953. Again, it is necessary to keep in mind that the increased enrollment from 1943 to 1948 is

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the result of the Cadet Nurse Corps program. The increased enrollment from 1951 to 1953 reflects the number of students receiving assistance under the State Scholarship Aid program. More will be said about that later.

TOTAL NUMBER OF FRESHMAN, JUNIOR, SENIOR STUDENTS ENROLLED IN MINNESOTA SCHOOLS OF NURSING 1930-1953



(From Minnesota State Board of Examiners of Nurses.)

Today there are twenty-six accredited basic professional nursing programs in Minnesota in twenty-three schools of nursing. Of these, twenty are three-year diploma programs, and six are four-year programs leading usually to a Bachelor of Science in Nursing degree. (Three of the six collegiate nursing schools have both Bachelor degree and diploma programs.) Eighty per cent of the students are enrolled in the diploma programs and 20 per cent in the degree programs. One school, the University of Minnesota, offers programs to graduate nurses leading to both a Bachelor's degree and a Master's degree. In addition to the twenty-three schools, thirty-two hospitals and health agencies in Minnesota provide one or more approved courses in nursing by affiliation.

Nationally the picture is the same.

You will note that since 1930 the number of schools has decreased from nearly 2,000 to a little over 1,000 in 1953, while the number of students enrolled has increased from around 80,000

FACTS ABOUT NURSING IN MINNESOTA—DODDS

in 1930 to over 100,000 in 1953. (The peak between the years 1943 and 1948 was the result of the U. S. Cadet Nurse Corps program.)

A recent study by the American Nurses Association† shows that as of January 1, 1953, Minnesota had the seventh highest total student nurse enrollment among the forty-eight states. (Yet 1950 census figures show that Minnesota ranked eighteenth among the states in population.) The same source showed that Minnesota admitted the eighth highest number of student nurses, and graduated the seventh highest number.

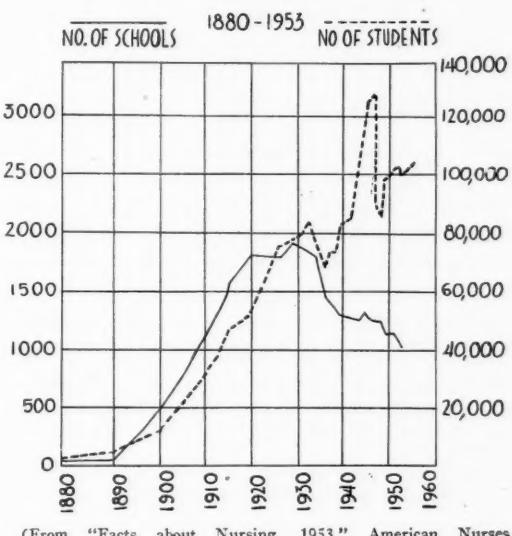
In the fiscal year 1953-54, Minnesota licensed 1,466 professional nurses—980 by examination and 486 by interstate endorsement. Minnesota endorsed to other states 820 registered nurses. As of July 1, 1954, 36,603 R.N. licenses had been issued in Minnesota since the licensing law was passed in 1907. A total of 12,680 registered nurses had renewed licenses for 1954. (Many of these, however, reside outside of Minnesota or are inactive.) The A.N.A. source quoted previously† indicated that Minnesota had the sixth highest number of new registered nurses licensed by examination. Yet in 1952, Minnesota had only the twelfth highest average hospital census.

Practical nursing in Minnesota is a much newer venture, the Licensed Practical Nurses licensing law having passed in 1947. As of September 1, 1954, there were thirteen accredited practical nursing programs in Minnesota with a total enrollment of 300 students. Size of the student groups vary from eight to fifty-two; eight schools have less than twenty students enrolled. Minnesota ranks fifth highest among the states as to the number of practical nursing programs. In the fiscal year 1953-54, Minnesota licensed 300 practical nurses by examination and eleven by interstate endorsement. As of July 1, 1954, 2,958 licenses had been issued to practical nurses since 1947. A total of 2,541 had renewed their licenses for 1954. (Some of these, however, are inactive or reside outside Minnesota.) The A.N.A. study previously quoted,† indicated that Minnesota had the sixth highest number of new licensed practical nurses licensed by examination in 1952.

Many of the Minnesota Schools of Nursing, both professional and practical, could accept more

students than apply for admission. Thus we can assume that no qualified applicant is denied admission to a Minnesota school of nursing because all classes are filled. Furthermore, there are at

SCHOOLS OF NURSING AND STUDENT ENROLLMENT



(From "Facts about Nursing, 1953," American Nurses Association.)

present, listed with the Minnesota Nurse Counseling and Placement Service, about twenty-five vacancies on Minnesota School of Nursing faculties. Also, many of the faculty positions are at present filled by nurses not fully qualified by education or experience for these important teaching positions. Opening more schools of nursing would not, therefore, increase student enrollment and would obviously deplete the present school faculties to a danger point. Studies that have been completed regarding the cost of a school of nursing to the hospital have indicated in most instances that the schools are not self-supporting. One study completed in Minneapolis at the Swedish Hospital School of Nursing for the year 1951, concluded that the cost to the hospital for each student in the professional school was \$639.36 over and above the tuition that the student pays and the services that she contributes in her learning experience. Thus the operation of a school of nursing is an added cost to most hospitals.

Why are we faced with this alarming shortage of nurses? The shortage is the product of

†"Facts about Nursing—1953," American Nurses Association.

FACTS ABOUT NURSING IN MINNESOTA—DODDS

trends in medical care which we neither can nor wish to reverse. The shortage might better be expressed as an increased demand for nursing services. This increased demand has been influenced by many factors such as pre-paid hospital insurance plans, new and better medical techniques requiring more nursing service, and increased hospital construction, to mention only a few. For example, during the past five years, over 5,000 beds have been added to Minnesota hospitals.

What have we been doing about the problem?

The Minnesota Nurses Association through its state and district committees has carried out an active student nurse recruitment program. In the year 1953-54, a total of 119 high schools of the 484 in Minnesota were visited and nursing information was distributed on career days; high school counselors were visited; five films on nursing were shown in forty schools; 5,000 brochures were distributed; MNA co-sponsored the special vocational issue of the *Minnesota Daily* providing information about the various health fields. This special edition was distributed to every high school senior in Minnesota. And these recruitment activities were financed entirely by the nurses of Minnesota!

Despite the increasing competition for women in other professional fields and in industry: (a) more nurses are practicing their profession than ever before; (b) a larger proportion of girls are entering nursing than ever before—except during the U. S. Cadet Nurse Corps period 1943-48; and (c) the average working life of a nurse is longer than ever before, largely because many more married nurses are working.*

The state Scholarship Aid program has provided assistance to 795 student nurses since the law was passed in 1951. All but two counties in Minnesota have students in schools of nursing who are recipients of the state scholarships. The criteria for awarding these scholarships is based on the financial need of the student and her ability to complete her nursing course. The maximum amount of a scholarship for the professional nursing candidate is \$600, and for the practical

*"Meeting Your Hospital Personnel Shortage"—August, 1953. Office of Defense Mobilization, Health Resources Advisory Committee.

nursing candidate is \$300. In return for this scholarship, the student must practice nursing in Minnesota for one year. We plan to introduce the scholarship bill in the 1955 legislative session and would like to have the continued support of the bill by the Minnesota State Medical Association. In addition to the state scholarships, hospitals, medical groups, or communities in general might well establish local nursing scholarships, the recipients of which would be required to return to work in that community for a specified time.

If it costs a hospital \$636 per student to operate a school of nursing, why isn't it just as economical for the student to be subsidized to that amount providing she returns to that community or hospital for employment as a graduate? Such an annual scholarship would help build up a supply of nursing personnel for the local hospital.

If "more schools of nursing" is not the answer to our problem, what is the solution? Obviously we cannot continue to maintain the status quo and wait for the return of the "good old days." We must learn to utilize the personnel we have more effectively. To do this we must cast off the shackles of tradition and scrutinize each task within the hospital to see whether it is really necessary for the welfare of the patient and whether it is being performed in the most economical manner from the standpoint of time and choice of personnel. This takes planning, not only in the nursing department but with the medical profession and hospital administrators as well. We must learn to use the knowledge and skills of each individual—professional nurse, practical nurse, attendant, nurse aide, and orderly—to its maximum.

We must see that professional nurses are assigned only those functions which require the type and amount of training they have had; that practical nurses are used in situations where some formal training is necessary but not to the same degree as the registered nurse; that attendants, nurse-aides and orderlies have an on-the-job training adequate to prepare them for their jobs. Numerous hospitals already are making progress in this regard. The key to the solution, however, lies within the individual hospital, since no two institutions present identical problems.

Sudden, Apparently Unexplained Deaths during Infancy

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SUDDEN, APPARENTLY unexplained deaths during infancy are always tragic events with painful consequences for everyone concerned. If they are not handled properly the parents may develop an acute sense of guilt over their possible negligence in the situation.

An infant in apparently good health is put to bed in a crib or buggy or in bed with its parents. Several hours later the infant is found dead. Sometimes he is lying on his face. Sometimes bed clothes are over his head. Often in the excitement the exact conditions are unnoted. The physician who is confronted with such a death is likely to assume that the baby has smothered or that he has died because of an enlarged thymus.

Upon examining 167 autopsies of children under one year of age who died suddenly, Werne and Garrow² (1947), were not able to find one case in which they could prove mechanical suffocation by bed clothes. It is probable that mechanical suffocation may occur as a terminal event during a debilitating disease in a child, but there is no risk of accidental suffocation from the bed clothes in a healthy child. There is also no relationship between the size of the thymus and adrenal glands and sudden death. Rabson¹ (1949) showed the relationship between sex and unexpected natural death in New York City. In the age group from birth to four years, males outnumbered females 2.7 per cent to 2.0 per cent, while in the age group from five to nine years the sexes were equally represented. During the first five years, four times as many boys as girls died suddenly. No girls were counted among the few cases of sudden unexpected death in the second period. This is another confirmation of the often remarked lethality of boy babies. Werne and Garrow,³ in a study of 299 cases, have shown

that pathologically there are microscopic inflammatory lesions of the upper and lower respiratory tracts and vascular changes in the respiratory tract, spleen, lymph nodes and thymus in these cases. The mononuclear pneumonia which is usually found is thought to be agonal, as it also is seen following a violent death in a child. The vascular changes are usually thrombi, focal inflammation, edema and hemorrhage. According to Werne and Garrow, the chief pathological findings in sudden apparently unexplained death during infancy are acute inflammation of the upper or lower respiratory tracts; gross exudate in the middle ears and mastoid antra; acute suppurative tonsillitis; congestion of the meninges; excess subarachnoid fluid; minute focal subarachnoid hemorrhages; congestion of the mucosa of the larynx, trachea, and bronchi; foci of necrosis in the larynx and trachea; hyperemia and hemorrhage in the tracheobronchial and cervical lymph nodes; pulmonary congestion and edema; emphysema; pulmonary capillary congestion and bronchitis or bronchiolitis; focal accumulation of macrophages and lymphocytes within the alveoli and pharyngeal filling with regurgitated vomitus. The vomitus is thought to be an agonal phenomenon.

In most cases, the etiology of a sudden death in an infant is fulminating respiratory disease. Other causes of apparently unexplained death during infancy are: meningococcemia; cerebral hemorrhage; adrenal hemorrhage; obstruction from a laryngeal papilloma; coronary artery disease; anaphylaxis; anesthesia; and postoperative sepsis.

Table I is a summary of seven case reports of children who died suddenly. Pathologically, they all showed bronchopneumonia.

In summary, the etiology of sudden apparently unexplained death during infancy is usually fulminating respiratory disease. This occurs

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SUDDEN DEATH DURING INFANCY—TUDOR

TABLE I.

Case	Sex	History	Age at Death	Postmortem
1. Ryckman No. 103523 E	Male	B. wt. 7 lbs. 11 oz. Normal fullterm. Spontaneous delivery.	2 days	Bronchopneumonia
2. Tibesar No. 79975 G	Male	B. wt. 4 lbs. 3 oz. Bronchopneumonia, 3 mos.	4 mos.	Bronchopneumonia
3. Kiely No. 115656 A	Male	Erythroblastosis. Basilar meningitis. Cortical atrophy. Bronchopneumonia, 1 yr.	14 mos.	Bronchopneumonia. Internal hydrocephalus.
4. Hatzenbuhler No. 122472 B	Female	Myasthenia gravis (?)	8 mos.	Bronchopneumonia
5. Hellman No. 123893 A	Male	Common bile duct atresia. Frequent bronchitis.	5 mos.	Bronchopneumonia. Biliary cirrhosis.
6. Brady No. 130898	Male	B. wt. 6 lbs. 9 oz. Normal fullterm. Spontaneous delivery.	5 weeks	Biliary atresia. Bronchopneumonia
7. Miller No. 109338 E	Female	Congenital hemolytic anemia, 2 days. Splenectomy, 4 mos.	2 8/12 yrs.	Bronchopneumonia

more commonly in males. Agonal phenomena seen are: the presence of bed clothes over the face and around the neck; pharyngeal vomitus and a mononuclear pneumonia. In order to make a correct diagnosis a careful postmortem examination must be made in every case.

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"NO PRACTICAL VALUE"

Gamma globulin as a preventive of paralytic poliomyelitis has been found "of no practical value," says Gaylord W. Anderson, M.D., director of the School of Public Health, University of Minnesota.

The supposed prophylactic effects of GG were studied during 1953 under very carefully controlled conditions by a committee appointed by the U. S. Public Health Service. More than 235,000 children were involved in these studies. The report of the committee showed that beneficial effects were not demonstrated either in the mass inoculation of children in epidemic areas or in the inoculation of family and other close contacts of patients already ill with polio.

These findings, as well as a review of the current status of gamma globulin supplies on hand and of requirements for globulin, led to the recent decision by the Office of Defense Mobilization to discontinue the rationing of GG, a program carried on by that agency since 1953. This co-ordinated distribution of globulin (for

poliomyelitis) through state health departments will not be continued after December 31, 1954. According to the ODM, an increase in supply of globulin has taken place during the last two years to a point where all foreseeable demands can be met and rationing is no longer necessary.

GG is already available for purchase once again in drug stores for use by physicians in any way they desire. In addition to this source of supply, the Minnesota Department of Health expects to continue a limited program of distribution of globulin to physicians for certain uses, such as the prevention or modification of measles in young children and the protection of household contacts of cases of infectious hepatitis. Globulin has definite value in these conditions. GG that is distributed by the State Department of Health is furnished without charge through the American Red Cross and the National Foundation for Infantile Paralysis, Inc.—Minnesota's Health, December, 1954.

Laboratory Aids

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The Minnesota Society
of Clinical Pathologists

LABORATORY CONTROL OF ANTICOAGULANT THERAPY

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THE USE of the one-stage prothrombin test (Quick prothrombin time) in the control of therapy with anticoagulants of the dicumarol type is an excellent example of the role of the laboratory in modern medicine. In contrast to the screening procedures that occupy much of the time of the clinical laboratory, each prothrombin-time test in the control of anticoagulant therapy provides information specifically required and obtainable in no other way. A number of papers have appeared on this subject; the evidence behind most of these is somewhat less than impressive. Elsewhere^{1,2} have reviewed in some detail the evidence behind the rather strong and dogmatic comments that are to follow.

The prothrombin-time test consists in measurement of the clotting time of plasma on recalcification in the presence of standardized thromboplastin. The test is not merely rapid and convenient, as daily clinical laboratory tests must be, but is also highly accurate when it is properly performed. Nevertheless, unsatisfactory experiences with this test have been reasonably frequent; otherwise there would be no indication for this editorial report. These failures have been due to flagrant disregard of repeatedly emphasized technical principles, some of the more important of which follow:

1. The thromboplastin reagent used must be not only reproducible in its activity with respect to normal plasma but also specifically sensitive to the effect of dicumarol. The principal effect of dicumarol is not on prothrombin but on a substance called the "stable prothrombin conver-

sion factor"; it is this substance and not prothrombin that is measured by the prothrombin-time test when it is properly performed. Retention of the terms "prothrombin time" and "hypoprothrombinemia" to describe the effect of dicumarol is nevertheless inevitable after the years of use of this terminology. The stable prothrombin conversion factor, even in minute amounts, reacts with thromboplastin to form a stable complex (cothromboplastin reaction). Preparations of thromboplastin that have undergone this reaction are specifically insensitive indicators of the effect of dicumarol. At least two such preparations have been offered commercially by means of advertising resembling that extolling certain patent medicines. Since it must be assumed that few clinical laboratories will prepare their own thromboplastin, a step necessary for maximal accuracy, the practical suggestion is offered that no thromboplastin be purchased unless it is specified to be prepared from rabbit brain only, with no added substance whatsoever. It is a sad and rather surprising fact that no commercial manufacturer of thromboplastin ever has seen fit to consult the originator of the prothrombin-time test, Dr. Quick, according to his own statement.

2. The specimen of blood for the prothrombin-time test must be meticulously collected. Incipient coagulation before mixture with oxalate, and likewise an excess of oxalate, must be avoided. The former gives an erroneously short prothrombin time; the latter may cause a false result of incoagulability. It is a good practical rule never to report a prothrombin-time test as showing "no clot" without examining another specimen of blood, since an incorrect report of incoagulability is obviously a serious error. Although one might think that such obvious errors should be rare, ample experience has shown that when specimens of blood are not collected by experienced labora-

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tory personnel they are often unsuitable for the prothrombin-time test. This probably has been an important factor in unsatisfactory experience with dicumarol therapy in large teaching hospitals in which specimens may be collected by medical students and interns.

3. The apparatus for the test must provide for control of temperature without sacrifice of visibility of the clot, preferably by means of a glass water bath. The light should be adjustable to the maximal advantage of the technician. There also must be a means of accurate measurement of the clotting time, preferably an electric stop clock operated by a foot pedal, which leaves the hands free for the necessary manipulation of pipet and test tube. Elaborate water baths that do not allow a good view of the clotting process and photoelectric apparatus that hampers the rapid addition of reagents and the control of temperature are not improvements.

4. Perhaps most important of all, the test must be performed by a person properly grounded in laboratory discipline who has had sufficient practice with this specific test under supervision. Such a person must be allowed to perform the test with reasonable freedom from interruption. Coagulation tests, involving precise timing, are peculiarly susceptible to error due to interruptions, such as the innumerable telephone calls that many clinical laboratories receive. Far too often, errors are attributed to basic inadequacies of technique when they are actually due to impossible working conditions.

Dogmatism will not be carried so far as to

specify the precise version of the Quick prothrombin test that should be followed; reference is made to a technique that has given excellent results over a fifteen-year period.¹ Several other versions appear to have given good results but no modifications or gadgets are likely to circumvent the basic laboratory requirements with respect to reagents, specimens, apparatus, personnel and time.

This brief account is concerned only with the laboratory techniques involved in the control of anticoagulant therapy, not with the therapy itself. It may properly be noted, however, that the originators of such therapeutic methods emphasized from the outset the absolute necessity of precise laboratory control. It is thus surprising that authors who have condemned anticoagulant therapy as hazardous often have failed to mention how they performed the prothrombin-time test or even have stated that due to lack of technical personnel they were unable to perform this test accurately. This attitude resembles that of a surgeon who would condemn the operation of cholecystectomy on the basis of a series of strictures of the common bile duct.

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EARNINGS OF REHABILITATED VETERANS

Disabled veterans rehabilitated under a special VA training program have more than doubled their pre-war incomes. This is one of the findings of a follow-up survey conducted by the Veterans Administration. It shows that before service the men averaged \$32 a week, but after the special training, they averaged \$72 a week. In the postwar years, the average pay of all non-veterans went up 19 per cent, that of able-bodied veterans 50 per cent, but the average veteran who completed the special training increased his earnings 75 per cent in this period. Medical education was one of the fields where the vet-

erans had a high rate of rehabilitation, 76 per cent. Medical disabilities of the veterans surveyed were classified as follows: orthopedic 41 per cent, nervous or mental 24 per cent, circulatory and heart 7 per cent, and tuberculosis or other respiratory 8 per cent.

The special training is restricted to service-connected cases where the disability has or could seriously interfere with the veteran's employment in his established occupation. Training is limited to four years. The average in the group studied twenty-one months.

Editorial

ARTHUR H. WELLS, M.D., *Editor*
HENRY G. MOEHRING, M.D.
JOHN F. BRIGGS, M.D.

"I'M NOT MARRYING YOUR MOTHER"

Well, maybe you aren't marrying your future spouse's mother, but you might almost as well be. And except for the less certainty about paternity, you might almost as well be marrying the (apparent) father, too. Setting aside all the personal characteristics that your spouse might acquire from parents via merely growing up with them, the Metropolitan Life Insurance Company's *Statistical Bulletin* for September, 1954, points out in its lead article on "Family History and Longevity" the following interesting facts.

The mortality among 15,000 policyholders who had two or more close relatives with cardiovascular-renal disease acquired before age sixty, was about 40 per cent higher than for standard ordinary risks as a whole. Most of the excess mortality was from diseases of the heart and vascular system.

In two large companies, among insured who, in addition to having a family history of cardiovascular-renal disease, either were slightly overweight or had a slight elevation in blood pressure, the mortality was 70 per cent higher than the average for ordinary standard risks.

The work of Dr. May Wilson and her associates in New York City indicates an hereditary susceptibility to rheumatic fever and rheumatic heart disease.

The prevalence of coronary heart disease was considerably higher among the parents of a group of young people suffering from coronary heart disease than it was among parents in a control group.

In policyholders reporting two or more cases of cancer in parents or siblings under age sixty, the mortality from all causes was about average, but the mortality from cancer, which accounted for one-third of all the deaths in this group, was more than twice the average.

The mortality from diabetes among policyholders with even a single diabetic person (at any age) in the family was nearly twice the average for all standard ordinary policyholders.

The mortality from suicide was several times the normal in insured persons who reported two or more cases of mental disease in the family before the age sixty (the age limitation serves to eliminate most cases of mental disease or degeneration due to cerebral arteriosclerosis).

Persons with a good family history of longevity, live longer on the average than those with a poor record of parental longevity.

All of which would make us amend the advice to choose a spouse with good health, intelligence, and a good sense of humor, by the addition of similar specifications for the spouse's parents.

H.G.M.

LIFE INSURANCE APPLICANT EXAMINATIONS

With more than 70 million Americans now owning life insurance and with hundreds of thousands of applicants being considered each year, the life insurance medical examiner has become a key figure in the largest American business enterprise outside the U. S. Government itself.

The wonder of it all is that in such a tremendous mass operation—Involving printed forms, special rules and routines, and a multitude of personalities—the job of qualifying applicants for life insurance goes as smoothly as it does, with irritation and inconvenience to the examining doctor occurring only in relatively rare cases.

Consider some of the elements involved. There are forms to be filled out—fairly complex forms because the information desired usually relates to what will be a lifetime transaction, often involving many thousands of dollars. There are routines to follow which may on occasion seem a nuisance to the examiner unfamiliar with life insurance home office procedures. And lastly, there are personalities to be dealt with, not the least of which may be the applicant who, because he presumes himself to be healthy, does not always feel the same compulsion to co-operate as he would if he were seeking medical counsel in the usual doctor-patient relationship.

The fact, then, that these vast numbers of ex-

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aminations are conducted so smoothly and successfully is, to a considerable extent, a tribute to the American physician's co-operation in expediting a social service which is of the broadest significance to modern-day Americans—doctors included.

The purpose of the life insurance examination is to obtain objective criteria which can be applied to the laws of actuarial and underwriting science. It is by no means a complete evaluation of the applicant's physical condition; this obviously would be too costly. But by establishing a minimum number of objective criteria such as the level of blood pressure, heart rate, height, weight, et cetera, definite objective or dollar and cents evaluation can be placed on the prospects for the individual's longevity. Actuarial and underwriting science is amazingly precise, even using as facts such variables as physical findings.

Relatively meager though these facts are, the industry has been able to set up a system of evaluating longevity which has proven very accurate. And since these facts are the whole basis for action, they must be accurately determined. The examinations in many cases have uncovered medical impairments of which the applicant was unaware, and have prompted him to seek medical help for these impairments.

The questionnaire which the physician is asked to fill out covers not only results of the examination, but the medical history of the applicant and his family, as certified to by the applicant. Some of these questions may strike the physician as reaching far afield, but each is designed to bring out some aspect of the record which the company, on the basis of its experience, deems relevant. An active committee of medical directors has as its sole purpose the elimination of unnecessary questions from the medical blank, and from the standpoint of the industry, these blanks have been materially shortened in recent years.

Unfortunately, because of the size of the industry, both applicant and physician must conform to a set routine. However, because of the importance of the examinations, and recognizing that the facts the doctors are attempting to establish are much better obtained in the doctors' offices, the companies prefer and do all in their power to see that these examinations are made at the doctors' offices.

It would be impossible to act impartially on the large number of cases handled each year if the

company solicited the personal judgment of the physician. Medical underwriting depends on impartial facts, and cannot take into consideration the most interesting part of medicine—the *art* of medicine. The physician cannot be expected to decline or rate the applicant. It is his function to furnish the facts, and let the underwriters use these facts to determine the rating. This impersonal relationship has proven to be the only practical and equitable way of determining the necessary facts.

With hundreds of thousands of applicants reviewed each year, insurance "medicals" are a source of significant income to the medical profession. Currently, the life insurance companies are paying the doctors of the country about 17.5 millions a year for these examinations, with the level at which fees are fixed closely related to usual charges for comparable work.

As a result of this continuous co-operation by the medical profession, the insured mortality of the companies has been progressively improving, and this in turn has allowed the life insurance companies to hold the cost of life insurance protection to the American public at a far lower level than would otherwise be possible.

KARL W. ANDERSON, M.D.

RADIO-ISOTOPES IN MEDICINE

Although the advent of artificial radio-isotopes has had its principal impact on research, certain applications are emerging which are useful in the practice of medicine, both diagnostically and therapeutically. So far, there are four isotopes which stand out in this respect; namely, I-131, P-32, Au-198, and Co-60.

Diagnostically, the radioisotopes are employed as "tracers." For example, the avidity of the thyroid gland for iodine, a property directly related to thyroid function, is determined by administering orally a tiny quantity of radio-active iodine and then measuring with a Geiger counter after a certain number of hours the percentage of this I-131 which has been taken up by the thyroid gland. Similarly, the blood volume can be determined by injecting a small quantity of an appropriate radio-isotope into the blood stream, allowing time for mixing, and then withdrawing and measuring a sample to determine the dilution factor. Radio-isotope tracer techniques have the advantage of simplicity and increased accuracy

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over some of the alternative chemical and colorimetric methods.

The usefulness of thyroid uptake studies with I-131 is not limited to large institutions and city practice. This method is applicable to small scale practice also, and various rural hospitals and clinics are profiting from its contribution to the accurate diagnoses of thyroid aberration.

Therapeutically, radio-isotopes fall in the field of radiation therapy, and permit a wide range of applications, sometimes involving an intimate role in metabolic processes, as when P-32 is used to treat polycythemia vera, and I-131 to treat Grave's disease. Radioactive gold (Au-198) holds promise in the palliation of selected cases of carcinomatous effusions in the abdominal and pleural cavities. Co-60 has many of the properties of radium as well as certain advantages over it and is being used as needle sources as well as in large radiation units for the treatment of malignancy in thick portions of the body.

Thanks to the pioneering experience of the last sixty years in the hazards of radiation, numerous safeguards have now been instituted so that work with radio-isotopes can be a completely safe procedure.

ELMER C. PAULSON, M.D.

THE SAVINGS AND LOAN INVESTMENT

What is the value to a doctor's estate of an investment in savings and loan associations? The answer is quite simple. No other investment of equal safety and liquidity pays such a high return. Let's look at those three key points in order: safety, liquidity and high return.

From a safety standpoint, you're on solid ground with an investment in insured savings and loan associations. You are investing in families and homes, the very backbone of America. Basically, the business of the savings and loan industry is that of making mortgage loans on single-family, owner-occupied homes. Financial history proves that those are blue-chip risks. They meet the most important safety requirement of a good investment program—diversification. The incomes of families buying homes are derived from hundreds of different businesses, services and professions. Your investment in savings and loan associations, in other words, is backed by all or

most of the business activity in an entire metropolitan area.

In addition to the safety factors inherent in a savings and loan investment, your account at any federally chartered association is insured for safety up to \$10,000 by the Federal Savings and Loan Insurance Corporation. This insurance is automatic without charge to you.

Turning to the factor of liquidity, or availability of your money, it has long been the custom of savings and loan associations in metropolitan areas to pay withdrawals promptly on request. Larger associations, in particular, ordinarily maintain a high degree of liquidity with a strong percentage of their assets in cash and government bonds. In addition, there is a constant flow of new cash into each association as a result of new savings accounts, monthly interest payments on loans and monthly repayments of the principal on mortgages.

This brings us to the important point of high return. Look back through the years and you'll find that savings and loan associations have always paid generous dividends. In the Twin Cities, they currently are paying investors an annual rate of 3 per cent compounded semi-annually. To earn a higher rate of return, you'd have to move into an investment area that may sacrifice safety.

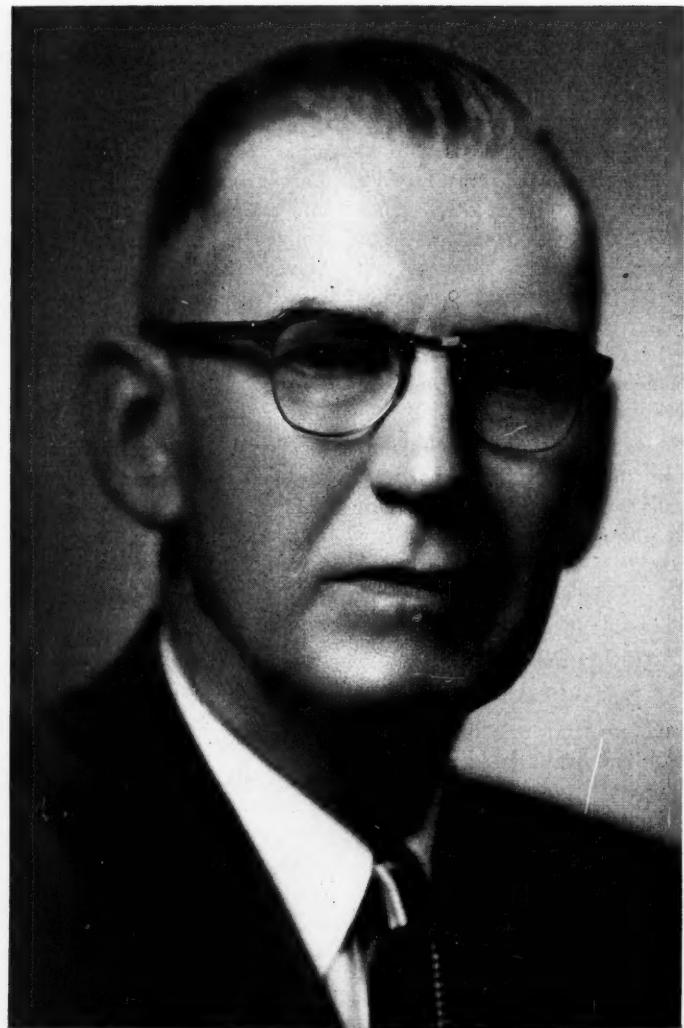
Let us look briefly now at two other advantages of investing in savings and loan associations. It requires no management expense, worry or bother, such as is involved in owning stocks or bonds and many other investments. And your savings and loan investment is not subject to fluctuations in principal value as is the bond and stock.

Basically, the savings and loan investment is valuable to your estate because it pays a higher return than is available on other investments of equal safety, liquidity and convenience.

Roy W. LARSON
President, Twin City Federal
Savings and Loan Association

CORRECTION

In the October, 1954, issue of MINNESOTA MEDICINE, an error occurred in the paper by Matthew A. Kiess, O.S.B., Ph.D., Robert P. Koenig, M.D., and Clifford R. Myre, M.D., entitled "Development of a Simplified Filter Paper Electrophoresis with a Study of Human Serum Proteins." Line eight, column two, page 709, should read "... and 15 grams of sodium diethyl barbiturate..."



A. O. SWENSON, M.D.
President, Minnesota State Medical Association
1955

President's Letter

THE ANNUAL CHALLENGE

The beginning of a new year, and all that traditionally goes with it, has turned out to be a challenge of major proportions in the year 1955.

Every year we find ourselves confronted with the dilemma of feeling obliged to make a certain number of New Year's resolutions—which we immediately break with equally resolute rationalization. What we need is the fortitude and determination to either keep every resolution we make, or to so live that it will be unnecessary to make resolutions in the first place.

But seriously, New Year's resolutions have a proper place in our lives today. We take a backward and a forward look at this time of year—we analyze where we stumbled in the past year, and decide firmly not to stumble over the same things in the coming year. And thus, we grow in stature, in experience and in better living.

We as physicians, however, find that January 1 is not the only time we must firmly resolve. Throughout every month of every year we are constantly challenged by some new problem which requires a quick, and correct, decision on our part. With every new patient, with every new medical organization problem, with every new medical-economic concept, we meet a challenge to maintain the tradition of public service which has been our American heritage.

Because the above tasks seem never ending, there is a tendency to become discouraged and lackadaisical in our efforts. Let us realize that it is a privilege to serve, and the simplest and most effective way to attain our ends is for each of us to strive diligently to make our lives as close to the ideal of medical practice as possible.

As your new president, I hope to take over the duties with a humble and dedicated heart. I pledge to work for Medicine and its high ideals; with the good will and willing co-operation of all conscientious members of the Association, I feel that we can continue to maintain and improve the high plane of practice we have known in Minnesota through the years.

To say that I am proud of our organization is somewhat of an understatement, for this group has been a strong and valiant one in the state. It has constantly stood for right; it has fought hard for its position of leadership; it has been headed by some of the finest people in the profession. With such standards to follow and uphold, it will be a great challenge to your president. But I hereby resolve to serve my term as president to the best of my ability; and I pray that, with your valuable assistance, I shall not break that resolution.

Arnold O. Swenson

President, Minnesota State Medical Association

The Dean's Page

I would like to take this opportunity to say a few words to the physicians of Minnesota concerning the requests which the Regents of the University will present to the 1955 Legislature for the support of the Medical School and University Hospitals.

The basic support of the Medical School—that is, faculty and technical staff salaries, supplies and expenses, library, heat, light, custodial service and maintenance of Medical School buildings—is included in the general University maintenance request for \$17,262,846 for each year of the 1955-57 biennium. This includes \$771,423 for promotions and for a 7.5 per cent increase in faculty salaries to partially meet increases in living costs which have occurred over the past two years: \$391,647 for increases in Civil Service salaries, 6.9 per cent, in accord with the State Civil Service pattern; and \$707,719 for new faculty positions to take care of increasing enrollments and other service responsibilities.

The University Hospital request is a "special" of \$1,100,000 for the first year of the biennium and \$1,125,000 for the second year of the biennium. This really represents an authorization to the state treasurer to reimburse the University for one half of the bills of "county patients" up to a maximum of this amount. Incidentally, the annual appropriation requested is \$155,736 less for the first year and \$130,736 less for the second year than for the year 1954-55.

Other "specials" for each year of the biennium include \$75,000 for general medical research, \$15,000 for the human aspects of brucellosis, \$15,000 for continuation of the Multiple Sclerosis Clinic, \$469,966 for the Psychopathic Hospital, \$166,000 for Child Psychiatry, and \$278,345 for the Rehabilitation Center. There is no matching of state funds by counties for patients in psychiatry, child psychiatry, or rehabilitation.

For building the Regents are requesting three appropriations that are vitally important to the Medical School. These are as follows: for remodelling of Millard Hall \$330,000; for the Medical-Biological Library \$875,000; for the remodelling of the University Hospitals and for needed equipment of the Hospital and Mayo Memorial \$1,000,000.

The remodelling of Millard Hall, which was constructed more than forty years ago, has been long overdue but has been postponed until some of the departments that were previously housed in that building could be moved into the Mayo Memorial. This remodelling is a "must" if the laboratories in this building are to be used by the Departments of Physiology, Physiological Chemistry, and Pharmacology that will continue to occupy this building.

The Medical-Biological Library was listed almost twenty years ago by the students and faculty as the most critical need of the Medical School. The University of Minnesota has a splendid medical library, but since it has been housed in the Main Library Building, three or four blocks from the Medical School and Hospital, its use has been minimal. In the plans for the Mayo Memorial two floors were to be devoted to the Medical Library. However, the inflation and increased building costs which occurred as a result of the war in Korea necessitated the elimination of eight floors, including the library, from the tower portion of this building. The Medical Library was then placed on the University's list of buildings requested from the 1953 Legislature, but with appropriations at this session for a new law library building and for a library building on the Duluth Campus, the Medical Library was passed over.

A most important aspect of modern medical education is to develop in medical students the habit of intelligent and discriminating reading of medical literature as a basis for keeping abreast of medical developments throughout their years of

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Medical Economics

Edited by the
Committee on Medical Economics,
Minnesota State Medical Association
George Earl, M.D., Chairman

FEDERAL HEALTH BUDGET TO REACH OVER \$2 BILLION

The federal government this fiscal year (July 1954-June 1955) is spending an estimated \$2,141,681,661 for its health, medical and related activities, which range from construction of multi-million dollar hospitals to maintenance of clinics, according to a recent issue of the AMA Washington letter.

The programs are spread among more than a score of departments, independent agencies, and commissions. This total figure means:

1. It is 8 per cent more than \$1,775,882,000 budgeted by the federal government last year for the same purpose. (The 8 per cent overall increase does not include that part—70 per cent—of the Defense medical budget increase that the department estimates is chargeable to operating and construction costs, items not available last year under the accounting procedure then in use.)
2. It is equivalent to 10 per cent of the \$22,000,000,000 that represents the entire U. S. budget with defense security costs eliminated.
3. It is approximately one-sixth of all the money spent in any way for medical and health items in this country annually, including the cost of drugs, dental care, pharmaceutical items, and drug store sundries. (Department of Commerce estimates the total U. S. health bill at \$12,000,000,000.)

Departmental Breakdown

Breaking down the total figure by departments and their individual health and medical budgets, the following figures come to light:

Department of Defense—this year: \$845,487,-500; last year: \$533,311,000. Department of Health, Education and Welfare—this year: \$395,754,000; last year: \$340,553,000. Federal

Civil Defense Administration—this year: \$28,755,000; last year: \$26,650,000. Department of Interior—this year: \$28,023,498; last year: \$27,258,600. Atomic Energy Commission—this year: \$27,000,000; last year: \$26,565,000. Department of Labor—this year: \$6,811,000; last year: \$8,960,000. Federal Employes Health Program—this year: approximately \$6,000,000; last year: approximately \$6,000,000. Federal Trade Commission—this year: approximately \$1,000,000; last year: approximately \$1,000,000. Commission on Intergovernmental Relations—this year: \$414,000; last year: \$500,000. Civil Service Commission—this year: approximately \$358,000; last year: new item. Department of Commerce—this year: \$278,133; last year: \$621,000. Veterans Administration—this year: \$748,738,563; last year: \$747,415,264. Department of State—this year: \$12,607,667; last year: \$14,127,733. Foreign Operations Administration—this year: \$25,574,300; last year: \$24,500,000. Panama Canal Zone—this year: \$5,600,000; last year: \$5,448,600. National Science Foundation—this year: \$4,795,000; last year: \$8,000,000. Department of Treasury—this year: \$2,770,000; last year: \$2,790,000. Department of Justice—this year: \$1,300,000; last year: \$1,326,000. National Advisory Committee to Selective Service—this year: \$190,000; last year: \$265,000. Commission on Organization of Executive Branch of Government—this year: approximately \$130,000; last year: \$500,000. Health Resources Advisory Committee—this year: approximately \$95,000; last year: \$91,000.

JAMA ASKS TAX-SUPPORTED MEDICAL SCHOOLS RELAX RESTRICTIONS

A recent issue of *The Journal of the American Medical Association* has recommended that state and city medical schools should relax their

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restrictions on admitting students from limited geographical areas.

An editorial in *The Journal* states that such limitations represent "a shortsighted policy that is a disservice to both the state and the school." The article goes on:

"With roughly one-third as many applicants per vacancy to choose from as the other schools, the tax-supported schools are often placed in the unfortunate situation of having to select inferior applicants or fail to fill their quota."

With continually improved methods of screening candidates, *The Journal* says, the nation's medical schools have sharply cut the rate of students who drop out—largely because of academic failure—before graduation. This attrition rate dropped from 9.4 per cent in the freshman year 15 years ago to 5.1 per cent in 1952-53. Senior year attrition was only 0.2 per cent that year.

The article concludes: "As a result of being forced into unwise selections these (city and state) schools have an attrition rate twice that of schools that are free to select students without reference to their state residence. . . . If state and city schools would relax their restrictions even to the point of choosing a certain percentage of their students from other areas (at a slightly higher rate of tuition and with a certain amount of reciprocity) this would have a salutary effect."

AMEF REPORTS STATE STANDINGS

A recent report from the American Medical Education Foundation reveals the individual state standings in regard to reaching annual contribution goals to the Foundation.

The Foundation reports:

"In over-all income and contributors, the Foundation is ahead of last year's totals. However, we are still short of the estimated \$1,200,000 income figure that was projected earlier this year. We have received a total of \$1,051,000 from more than 17,000 contributors. Since we did not pass the million dollar mark until late in November last year, we are ahead in our income record of last year by about 30 days. In short, we have an estimated 30 days to surpass our 1953 record."

The above statement was made early in November, and the bulletin was issued in an effort to pass the goal before the end of 1954.

State Contributions

Summarizing individual state achievements in this vital field of aiding medical education, the Foundation stated that during the first ten months of 1954, six states exceeded their 1953 marks in both dollars raised and contributors. Four other states increased their dollar income over 1953 but have not exceeded their total number of contributors. Five states exceeded totals in the number of contributors but not their dollar income over the previous year. Two states remained even with their 1953 records.

It is disappointing to note that Minnesota is not on any of these lists. However, Minnesota physicians have an opportunity to begin 1955 with a new and better record. The importance of making contributions to this fund cannot be over-emphasized, for it has been one of American medicine's greatest weapons against federal subsidies for medical schools, which threatens federal control. It is also noted that considerable tax saving is realized by contributing to this fund.

PRESIDENT CITED FOR MEDICAL EDUCATION WORK

For his demonstrated interest in medical schools, and his efforts to bring them financial support from non-governmental sources, President Eisenhower has been honored with the first Frank H. Lahey award. While he was president of Columbia, Mr. Eisenhower was largely responsible for getting the National Fund for Medical Education under way. This fund collects money from non-government sources for distribution to medical schools "with no strings attached."

The Lahey award is a memorial to the late Dr. Lahey of Boston, past president of the AMA, who was a leader in the movement to keep medical schools solvent without federal aid. The presentation was made at the White House by S. Sloan Colt of New York, president of the National Fund for Medical Education. It was sponsored by the American Medical Association and the Association of American Medical Colleges, as well as the National Fund Organization.

In accepting the award, the President said he believes medicine "is one profession we don't want to get under the dead hand of bureaucracy." He said:

"Quite naturally, I am very proud to receive an award from such an Association, from such a group. There is

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an added distinction because it bears the name of one of our greatest professionals and our greatest citizens. On the other hand, Mr. Colt, I rarely felt quite so unworthy of receiving an award because my part in the organization of this National Fund was really getting someone else to do the work. It would be far more fitting this morning if I were presenting this to you, because you have been President of the Association from the beginning. But I can say this: I don't know of any group that is doing more necessary and worthwhile work than making certain that our medical schools have ample funds from private sources to keep running, because this is one profession we don't want to get under the dead hand of bureaucracy."

REINSURANCE TO BE REINTRODUCED

President Eisenhower has announced that he definitely plans to resubmit his health reinsurance plan to the next Congress, in spite of widespread opposition, not only from the AMA, but from much of the insurance industry, the U. S. Chamber of Commerce and many other groups.

In announcing his intentions not too long ago, the President said it would be "an important part of the health program in the great gaps in the field of health," adding that "we are years behind our potential achievement in the availability and adequacy of health services."

Mrs. Hobby, secretary of HEW, when reiterating the President's plan to resubmit the program, was asked about AMA's opposition and stated, "I very much hope that the AMA will see its way clear to support health reinsurance. We have the same objectives, the difference is only one of method." Incidentally, no additional pronouncement of policy on this matter was forthcoming from the Clinical Session of the AMA in Miami in December. Speculation was abroad whether or not the AMA may possibly

have changed its mind on its opposition to reinsurance.

LABOR SECRETARY URGES EXPANSION OF HEALTH INSURANCE

Secretary of Labor Joseph P. Mitchell, joining in the public discussion of the administration's health and medical goals, advocates extension of health plans and continued development of medical education. According to a recent issue of the AMA Washington Letter, Mr. Mitchell made his statements in an address to the anniversary dinner of the Health Insurance Plan of Greater New York (HIP).

The Secretary said that great strides have been made in voluntary health insurance, providing "some degree of protection" to American families, but "much less has been done in terms of comprehensive health programs which provide complete medical and surgical care in the hospital and home."

Mr. Mitchell went on to say that there is no doubt in his mind that the American people are determined "to proceed on all fronts to establish adequate systems of health insurance."

Praises HIP

He also described HIP as "a good example of the development of a comprehensive system of medical care and hospitalization through a form of pre-payment which can be met by the average family." And, in addition to the widest possible medical care at the lowest possible cost, the country must have an adequate number of physicians, nurses and technicians as well as adequate hospitals, laboratories and medical research centers, Mr. Mitchell noted.

LARGE DOCTOR DRAFT CALL

More than twice the number of men taken in the last Doctor Draft call will be tapped for April induction, the Defense Department announces. This is presumably the last medical officer call under the present Doctor Draft Act, which is scheduled to expire on June 30, 1955. The Defense Department has asked Selective Service for 1,275 physicians—825 for the Army, 200 for the Navy,

and 250 for the Air Force—and 459 dentists for the three-month period starting next April. The last quarterly Doctor Draft call, issued for December, 1954, took 550 physicians and 150 dentists. Priority III men (doctors not educated at government expense who have served no time on active duty) will comprise the majority of those taken in April.

Public Health

TRIBUTE TO TWO PUBLIC HEALTH WORKERS

Public health in Minnesota experienced an irreparable loss in the recent death of two women who spent their lives in devoted service to the people of this state. The Minnesota Department of Health desires to pay tribute in this section of MINNESOTA MEDICINE to the memory of Mrs. Kathryne R. Pearce and Miss Ann S. Nyquist. Mrs. Pearce, executive secretary of the Hennepin County Tuberculosis Association, died November 27, 1954, at the age of fifty-six years. Miss Nyquist, chief of the Section of Public Health Nursing for the Minnesota Department of Health, died December 8, 1954, at the age of sixty-six.

Mrs. Pearce was the wife of Nabol O. Pearce, M.D., until recently director of the Chronic Diseases and Geriatrics program of the State Health Department. Her work with the Tuberculosis Association began in 1918, when she was graduated from the University of Minnesota School of Social Work. She served as executive secretary of the Association for thirty-two years, from 1922 until her death in 1954. She was an officer or member of all Hennepin County organizations concerned with tuberculosis control, including the health council, the Tuberculosis Administrators, and Trudeau Society, and the Minnesota Rehabilitation Association. For twenty years, she served as member or chairman of the Committee on Rehabilitation of the National Tuberculosis Association, and in 1932 was president of the National Conference of Tuberculosis Workers.

The Board of Directors of the Association said of Mrs. Pearce:

"Under her sincere and able direction, the Association's work has not only been responsible for saving many lives in Hennepin County, but it has served as a pattern, in many instances, for tuberculosis control measures throughout the nation. She was deeply concerned with the return of the tuberculosis patient to normal living and self-support. She helped to establish the national pattern for the rehabilitation of the tuberculous, making training for a future job a part of the treatment. She was alert to the many special problems of the tuberculous patient and his family—emotional and economic—and, to help solve these problems, worked with many individuals and groups in the community. The nation's fight against tuberculosis is proof of what consistent effort and hard work can accomplish. She was such a worker."

Ann Nyquist, too, spent her entire adult life in public service. Born in Renville County, Minnesota, she took her nurses training at St. Barnabas Hospital, Minneapolis. She was graduated in

1915 and served for the next three years there as anesthetist. During World War I, she served in a similar capacity at Base Hospital 26 in France. On her return, she studied public health nursing at the University of Minnesota, completing her course in 1920. Her first public health assignment was with the Red Cross in Sherburne County. Later, she served as public health nurse in Renville County.

In 1925, Miss Nyquist joined the Minnesota Department of Health as advisory nurse. In this position, her duties consisted of field supervision of local nurses and promotional work in the development of public health nursing services in Minnesota counties. In 1941, she was appointed director of public health nursing, a position she held until her death.

During World War II, she served as chairman of the Minnesota Procurement and Assignment Service for Nurses. In 1946, she received a citation signed by President Harry S. Truman "in recognition of uncompensated service to the United States of America during World War II." The citation reads: "She served with diligence and distinction in the interests of meeting both military and civilian needs . . . for the successful solution of complex and imperative wartime problems." In the same year she received a similar citation from the American National Red Cross.

In 1949, the Minnesota Department of Health, with the co-operation of the Hennepin County Tuberculosis Association and the Minnesota Division, American Cancer Society, produced the film, *Your Friend in Blue*. This film, portraying the work of a public health nurse, was dedicated "To a pioneer Minnesota public health nurse, Ann S. Nyquist." The film has been widely shown throughout the United States and has been used by the Voice of America.

Miss Nyquist had many public health interests. Among the chief were the Indian health program, rehabilitation of the disabled, meeting the needs of retarded children, and advancing the professional status of public health nurses. She was active in both the national and state League for Nursing, and during the last week of her life organized a fund drive for that group.

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MINNESOTA MEDICINE



Current Cardiac Concepts

DIAGNOSIS OF CORONARY HEART DISEASE

With the increasing recognition of the prevalence of coronary arteriosclerosis, doctors have become increasingly cognizant of the shortcomings of currently used diagnostic procedures. Obvious cases are readily recognized by their characteristic symptomatology and/or their specific electrocardiographic abnormalities. The electrocardiogram need not, however, be abnormal, and many cases show normal electrocardiographic pattern. Careful physical examination may disclose no abnormalities. Asymptomatic cases are, therefore, seldom recognized unless special diagnostic tests are made routinely or are indicated by certain non-specific abnormalities detected on routine physical examination.

There remain, nevertheless, many cases in which both clinical history and special diagnostic procedures are normal, and consequently, the clinical diagnosis of arteriosclerotic heart disease cannot possibly be made. It is this silent case that defies all known methods of detection which is an enigma to the physician. How often, unfortunately, is a patient given a "clean bill of health" only to have, subsequently, an acute myocardial infarction or, worse yet, to die suddenly from coronary heart disease which obviously was present at the time of the "negative" examination? It is because of this that one must be cautious to carefully evaluate vague, but suggestive, symptoms when they appear to plague one's diagnostic acumen.

On the other hand, it is equally important that the physician not be misled by a patient's vague chest symptoms into making a diagnosis of heart disease which does not exist. Important as it may be to make the cardiac patient aware of his disease and to teach him how to best protect himself, insofar as is possible, from its complications, so is it equally important to assure the patient who has no such disease that his symptoms are not cardiac in origin. No greater injustice can be done the individual with a normal heart than to mistakenly tell him he has heart disease, thereby coloring all his future actions and thoughts with the fear of imminent and unpredictable happenings. Few among us could accept with equanimity the diagnosis of coronary heart disease with all its implications; yet few among us would want *not* to be informed of its presence so that any prophylactic measures of value could be instituted. It is therefore of extreme urgency that the diagnosis, negative or positive, be as accurate as possible.

It is the presence of pain in any of the locations wherein heart pain may occur which usually raises the question of the possible presence of coronary heart disease. The clinical picture and electrocardiographic evolution seen in typical acute myocardial infarction *usually* make this diagnosis relatively simple, and other diseases with similar clinical symptoms are excluded with relative ease. On the other hand, with the shorter and generally milder pain of transitory coronary insufficiency (angina pectoris) the proper evaluation may be more difficult. No laboratory aid is as important in making this diagnosis as is a carefully elicited history. The location, character and radiation of the pain are often of help, but most important is the fact that this pain is resultant upon exertion (physical or emotional) and that it subsides promptly with rest or with nitroglycerine (although the latter occasionally relieves non-cardiac pains of smooth muscle origin). This pain does not generally occur at rest (except with myocardial infarction), and the fact that it is more easily precipitated after eating or on a cold or windy day is important diagnostically.

The reproduction of the pain or the production of electrocardiographic changes by the inhalation of oxygen poor air mixtures or the Master Two Step Test is of inestimable aid diagnostically if the result is positive. A negative test certainly does not exclude arteriosclerotic heart disease.

In recent years much study has been devoted to understanding the relationship of coronary heart disease to serum lipids in general and to serum cholesterol more specifically. Although research workers agree that the two are intimately related, this relationship is not yet clarified, and the level of serum lipids cannot be used diagnostically. Tests based on the relationship of the amounts of one type of lipid to another or on lipid patterns as determined by ultracentrifugation have not proved uniformly reliable. Authenticated cases of coronary heart disease with normal lipid amounts and proportions occur commonly.

It is entirely conceivable that someday a chemical or electrocardiographic test will be devised to detect the cases of "silent" coronary heart disease. There is also an increasing awareness of an apparent hormonal factor, and a diagnostic test along such lines may be forthcoming. In any event, no single consistently accurate test is now available, and it is on the carefully elicited and clearly evaluated clinical history that one must

Contribution from the Minnesota Heart Association.

JANUARY, 1955

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AMERICAN MEDICAL ASSOCIATION

Proceedings of the House of Delegates

EIGHTH CLINICAL MEETING

November 29 to December 2, 1954

Miami, Florida

Geriatrics, medical ethics, internships, grievance committees, hospital accreditation, osteopathy, the doctor draft law, state-subsidized medicine and malpractice insurance problems were among the major subjects of discussion and action by the House of Delegates at the American Medical Association's Eighth Clinical Meeting held November 29-December 2 in Miami.

During the meeting the AMA Board of Trustees also announced the appointment of a thirteen-member Commission to make a comprehensive survey of the various types of plans through which the American people receive medical services. The Commission, headed by Dr. Leonard W. Larson of Bismarck, North Dakota, member of the Board of Trustees, will begin work immediately and will require at least a year to complete its survey.

Named as the 1954 General Practitioner of the Year was Dr. Karl B. Pace of Greenville, North Carolina, whose selection by a special committee of the Board of Trustees was announced at the opening session of the House of Delegates on Monday by Dr. Dwight H. Murray of Napa, California, Board Chairman. Dr. Pace received the medal and citation, presented annually for community service by a family doctor, from Dr. Walter B. Martin of Norfolk, Virginia, President of the American Medical Association, immediately after the announcement.

Other highlights of the opening session were addresses by Dr. Martin; Seaborn P. Collins, National Commander of the American Legion; Mrs. Oveta Culp Hobby, Secretary of Health, Education and Welfare; Edwin J. Faulkner, President of the Woodmen Accident and Life Company of Lincoln, Nebraska.

Mr. Collins told the House that he is willing to appoint qualified Legion representatives on a committee to take part in joint Legion-AMA study of veterans' hospitalization. Later during the meeting the Board of Trustees announced appointment of a three-man committee to meet with the Legion on the issue of veterans' medical care. The members of the AMA committee are Dr. Elmer Hess, Dr. David Allman and Dr. Louis Orr.

Registration toward the end of the third day of the Clinical Meeting included 3,167 physicians; 3,441 guests including residents, interns, nurses and others, and approximately 900 exhibitors and exhibitors' guests—for a grand total

of more than 7,500. Final total registration at the 1953 Clinical Meeting in St. Louis was 7,716.

New AMA Geriatrics Unit

The House of Delegates passed a Pennsylvania resolution which directed that the AMA Board of Trustees "consider the creation of an organization on geriatrics within the present structure of the American Medical Association, the purpose of which shall be (1) to develop and assist committees on geriatrics and gerontology originating from constituent state associations and component county societies of the American Medical Association; (2) to act as a liaison between such state and county committees so there shall be a free flow of information between all levels of organized medicine on the subject of geriatrics; (3) to make available to the American people such facts, data and opinions concerning the subject of geriatrics as may be considered of value in alleviating social and medical problems created by the increasing population of older age groups; and (4) to perform such other duties as will improve and advance the medical care rendered to people of the older age group."

Medical Ethics

Accepting a recommendation in a report of the Council on Constitution and Bylaws, the House amended Section 7 of Chapter I of the Principles of Medical Ethics so that it now reads as follows on the subject of patents and copyrights:

"A physician may patent surgical instruments, appliances and medicines or copyright publications, methods and procedures. The use of such patents or copyrights or the receipt of remuneration from them which retards or inhibits research or restricts the benefits derivable therefrom is unethical."

In another action involving medical ethics, the House rejected a Kansas resolution which would have removed Section 8 of Chapter I from the Principles of Medical Ethics. The Reference Committee on Miscellaneous Business, in recommending disapproval of the resolution, said:

"The American Medical Association would fail to assume a vital responsibility if no provision is included in the Principles of Medical Ethics regarding the problem of ownership of drug stores and dispensing of drugs by physicians. . . . It is possible that some phases of this principle are susceptible of amendment or change, but certainly the entire principle should not be discarded."

PROCEEDINGS OF HOUSE OF DELEGATES, AMA

Report on Internships

Acting on the report of the Ad Hoc Committee on Internships, the House accepted a recommendation of the Reference Committee on Medical Education and Hospitals that "the data and judgments of the Ad Hoc Committee on Internships will provide valuable guidance to the Council on Medical Education and Hospitals and with this in view it is recommended that the report be referred to the latter for their further study and guidance." Following are a few excerpts from the report of the Ad Hoc Committee on Internships:

"It is our opinion that graduates of foreign medical schools should be considered for intern appointment in approved hospitals only when there is satisfactory evidence that:

"1. Language difficulties will not seriously impair the program.

"2. The same educational standards are applied to graduates of foreign schools as to graduates of approved American medical colleges.

"3. The appropriate state licensing board approves. . . .

"The Committee believes that the present standards detailing only the number of annual admissions, autopsy rate, number of beds and assignment of an intern to from 15 to 25 beds, are without significant meaning unless and until every local situation is reviewed 'on the grounds' and with full opportunity for discussion between the representative of the accrediting body and representatives of the hospital's governing board and its medical staff. . . .

"Had the 'two-thirds rule' remained a requirement and been rigidly applied to the two consecutive intern years 1952-3 in combination with 1953-4 it would have removed 448 hospitals, cancelled 4,205 internships to which 784 students were matched in those years and reduced the number of internships available to 6,766. . . .

"The committee suggests consideration of some requirement based on filling a percentage of approved internships and a time limit to eliminate some of the unhealthy aspects of the present situation. The following requirement is recommended: Any internship program which in two successive years does not obtain one-fourth of its stated intern complement be disapproved for internship training.

"As applied to the figures for 1952-3 in combination with 1953-4, this requirement would have removed 277 hospitals, cancelled 2,139 internships to which 80 students were matched in those years and reduced the number of internships available to 8,832."

Grievance Committees

In order to improve efficiency and maintain high standards in the operation of grievance or mediation committees, the House endorsed the principles of two similar resolutions introduced by the Colorado and Mississippi delegations and asked the Board of Trustees to appoint a committee to study and report on recommended standards for the operation of such services. Both resolutions had emphasized the valuable public service aspects of grievance committees and had suggested that the committee appointed by the Board of Trustees be composed of representatives from constituent societies in which grievance committees have been effective and useful.

Hospital Accreditation

In place of an Indiana resolution protesting certain situations arising in connection with hospital inspections, the House adopted the following substitute resolution to resolve the problems in question:

"Resolved, that the Secretary of the American Medical Association be directed to request that the Joint Commission on the Accreditation of Hospitals supply a copy of the letter of notification regarding the results of the survey of each hospital to the Hospital Administrator, to the Chief of the Professional Staff and to the Chairman of the Governing Board of the hospital."

Osteopathy

The House concurred in the following supplementary report of the Board of Trustees on the osteopathic situation:

"Contingent on the receipt of the report from the Committee to Study the Relations Between Osteopathy and Medicine of its 'on campus' observations of osteopathic schools, the House of Delegates in June, 1954, agreed to hold in abeyance any action on this important subject until this meeting.

"The Committee, after meetings and extensive negotiations with the American Osteopathic Association, has now made final arrangements for visiting five of the six schools of osteopathy, and these plans have been approved by the Board of Trustees.

"It is the recommendation of the Board, therefore, that consideration of this matter be held in abeyance by the House of Delegates until the June, 1955, meeting, at which time the Committee expects to have a complete report of its findings concerning the nature, scope and quality of education in schools of osteopathy."

The Doctor Draft Law

The Reference Committee on Medical Military Affairs considered several reports and resolutions involving the doctor draft law, and then proposed the following policy statement which was adopted by the House of Delegates:

"(A) That on the basis of current information the House of Delegates commend and express itself as being in complete accord with the Board of Trustees and its Council on National Defense that the 'Doctor Draft Law' should not be extended after June 30, 1955, and that the House of Delegates further express its confidence in the ability of the Board of Trustees and its Council on National Defense to properly handle any new situation which may develop in regard to this highly complex and involved problem.

"(B) That the Board of Trustees and its Council on National Defense continue to study the problem of providing the best possible medical service for members of the armed forces and that they make recommendations to the Department of Defense at the earliest possible time for a more permanent solution to the problem, giving special attention to the further development of a career medical corps with adequate compensation therefor."

PROCEEDINGS OF HOUSE OF DELEGATES, AMA

State-Subsidized Medicine

Most controversial issue at the Miami meeting was a resolution on "Policy on Medical Practice by Tax Supported Medical Schools," introduced by the Mississippi State Medical Association. This resolution provided that:

"The American Medical Association reaffirm its unalterable opposition to socialized and state subsidized medicine regardless of the form which it may assume, and

"The House of Delegates of the American Medical Association is of the opinion that these principles should be considered by constituent and component medical societies together with all other facts pertinent to the local situation in all controversies arising in the employment of medical faculty by state (tax) supported medical schools and be fully considered in effecting action within the framework of this policy."

The Reference Committee on Medical Education and Hospitals agreed with that portion of the resolution regarding "unalterable opposition to socialized medicine" but recommended that the resolution be referred, without approval or disapproval at this time, to the Council on Medical Service which currently is studying the various aspects of this subject. The House adopted the reference committee's recommendation.

Eisenhower Reinsurance Plan

Time is not running out for those who believe in the voluntary way toward insurance protection, Edwin J. Faulkner, president of the Woodmen Accident and Life Company of Lincoln, Nebraska, told the delegates. Public opinion surveys show a substantial decline in the number of people who favor compulsory health insurance, he said.

Mr. Faulkner also pointed out that a federal reinsurance program will not help private companies to sell unwilling buyers. Nor will it make insurance any cheaper or more easily available to persons or areas which cannot now be reached by voluntary insurance companies. What it will do, in his opinion, is this:

1. To the extent that it encourages extending health insurance to insurable risks, it will result in excessive losses leading to pressure for direct federal subsidies.

2. It will involve a very broad delegation of powers which some later administration might abuse.

3. Participating insurance companies will be subject to government regulation of premium rates on reinsured business. Because of the rapidly changing pattern of health care costs insurers need a maximum flexibility to keep abreast of developments.

Malpractice Insurance

Two resolutions and a Board of Trustees supplementary report—all dealing with the problems

and difficulties in obtaining satisfactory professional liability insurance—were considered together by the Reference Committee on Insurance and Medical Service. The House of Delegates accepted the reference committee report which said: "Inasmuch as the Board of Trustees has reported that there is in progress a study on the subject, we feel that we can well await the recommendations that the Board is planning to make at the next session. Due to the apparent emergency aspect of the problem, the Board of Trustees is urged to report to the membership as soon as possible, through its component societies, on the progress of this urgent study."

Opening Session

Walter B. Martin, M.D., AMA President, declared at the opening session that "medicine belongs to the people" and physicians are "merely the purveyors" of medical care. Dr. Martin stressed that physicians have an obligation to the people that "goes beyond our own private practice and into the community," and he also emphasized the importance of "continued effort to meet the medical needs of the low-income and other non-insurable groups."

Mr. Collins, the American Legion National Commander, said that "we are citizens first and doctors and veterans second," as he urged removal of the veterans' medical care issue "from the area of name-calling and propaganda." The American Legion, he declared, neither expects nor wants the Government to give carte blanche entitlement to medical care to all veterans.

Mrs. Hobby, presenting the case for the Eisenhower Administration's health reinsurance proposal, said: "The health reinsurance proposal represents what we believe to be a necessity. It offers opportunity for self-help without subsidy." Mr. Faulkner, however, expressed the opinion that the reinsurance program, "would be foredoomed to disappoint its proponents," and he declared that voluntary health insurance can bring satisfactory protection "to practically all of our people" without a Federal reinsurance program.

Awards and Contributions

At the closing session of the House of Delegates the American Medical Association received a citation for pioneering in helping to bring educational television to the American public. James Keller, chairman of the Miami Citizens Committee for Educational Television, presented the award on behalf of the National Citizens Committee for Educational Television. Dr. Martin accepted the citation for the AMA.

At the same session the Utah State Medical Society, represented by George M. Fister, M.D., of Ogden, presented a check for \$10,355 to the American Medical Education Foundation to aid in relieving the financial plight of the nation's

(Continued on Page 67)

History of Medicine in Minnesota

THE PIONEER DOCTORS OF CHIPPEWA COUNTY

PRIOR TO THE YEAR 1900

LEON G. SMITH, M.D.

Montevideo, Minnesota

(Continued from October, 1954, issue)

It was upon Frink's farm, homesteaded in 1867, that much of Montevideo was built. What finally determined the future of the two villages, Chippewa City and Montevideo, was the location of the post-office, and that was brought to Montevideo by the superior foresight of its citizens. The mail was brought up the old Military Trail on the south bank of the Minnesota; and, since Montevideo was the first to build a ferry across the Minnesota below the mouth of the Chippewa, the mail was then brought up along the east bank of the Chippewa, with the natural result that they moved the post-office to the Montevideo side rather than transport the mail further across the river to Chippewa City.

The village was platted in 1870, the year in which the post-office, a school-house and a hotel were built. The sawed lumber for the post-office was hauled 100 miles, but the roof was made from bark, stripped from elm trees and then covered with dirt. The floor was of dirt, with a thick carpet of hay, necessitating rather high stepping. Counters in stores consisted of posts driven into the ground with boards laid across. On February 28, the same year, Montevideo was designated the county seat by action of the Territorial Legislature, and this spelled "finis" to Chippewa City.

Only two years later we come across the name of Montevideo's first physician, Dr. Murphy.

Dr. Lea Murphy was born in Wisconsin, November 27, 1849. His family consisted of his parents, three brothers and nine sisters. When he was seven years old, the family moved to St. Charles, Minnesota, where he attended public school and became interested in medicine, reading the medical books of his Grandfather Sedduth. He entered Rush Medical College in Chicago in 1871. On October 8 to 9 of that year the famous Chicago fire occurred, and he had to walk for miles hauling a little cart, on which was his trunk, containing his books and other student equipment.

In the summer of 1872, he drove to Montevideo by horse and sulky with what little medical equipment he owned, a pair of saddle-bags, and twenty-five dollars in cash. At that time, his nearest competitor was located at Redwood Falls, and his territory extended from Benson to the Dakota line, west of Canby. Two years later, Dr. Stratton located at Granite Falls.

Requirements for medical practice were not at all rigid at the time, and he was able to practice without a license. In fact, he was probably better equipped for his work, by his year in medical school, than many other doctors who had located in the new country. Many of them had picked up the rudiments of medicine and

HISTORY OF MEDICINE IN MINNESOTA

surgery, working as surgeon's aids, or hospital attendants during the Civil War, and then had simply set themselves up as physicians and surgeons.

Apparently his practice was a lucrative one, because within a year he had made enough money to return to medical school and complete his studies, graduating from Rush Medical College in 1874, and returning to Montevideo.

In 1875 he was married to Ruth Helen Lawrence, and three children were born to this marriage: son, Lloyd L., in 1876; daughter, Nelbert, in 1878; and, son, Lea M., in 1885.

A law passed in 1883, required practitioners of medicine to obtain a license. It exempted those who had practiced in the state for five years. (Four years later in 1887, the legislature passed a more stringent law, repealing the law of 1883 and prohibiting anyone from practicing medicine without a license under penalty of fine, or imprisonment, or both).

Evidently, Dr. Murphy practiced for nine years without one, none being required or, presumably, even obtainable. But October 11, 1883, he obtained his license, Number 45, making him one of the earliest licensees in the state.

In 1878, he developed a very severe case of rheumatic fever which incapacitated him for many months. Probably, as the result of this illness, and the necessity for avoiding some of the more strenuous duties of medical practice, he entered the drug business with O. A. Griffis. His brother, Will, who worked as a clerk in the drug store for several years, eventually bought out Mr. Griffis, bringing the drug store under the ownership of the two Murphys, and under the name of the Murphy Drug Store, it continued in active business until 1921.

Old files of the *Montevideo Leader* (December 9, 1882) record his performance of a difficult operation upon J. J. Skonard, working with Dr. Rogers. "After the patient was chloroformed, an extensive canal was found, leading from an opening on the left side of the neck as far as the angle of the jaw. The dissection was made in the region of important blood vessels and nerves, which had to be carefully avoided, as a little slip might have proved a very serious matter. Three hours of skillful manipulation brought out the sac entire, known among surgeons as a dermoid cyst. We understand the young man is doing well and the doctors think he will have no further trouble." December 31, 1886, mention was made of a new phone connecting his house and office, which must have been one of the first instruments in the county. On May 13, 1887, there was an account of his performing a difficult operation, assisted by Drs. Rogers and Moyer, upon Magnus Quamen of Milan, wherein "a large, fistulous tract, draining a necrotic area of the coracoid, as well as the acromion, process of the scapula, leading across the brachial plexus, and discharging upon the skin of the upper arm, was opened, the necrotic bone chiselled out, and the wound dressed. At present account the patient is doing well."

He spent the winter of 1889 on the Pacific Coast, and in 1890, he "packed his household goods and shipped them to Minneapolis, where he moved with his family, and assumed his new duties as Medical Examiner and Manager of the Mount Benevolent Insurance Association. The community regrets their leaving after almost twenty years among us."

March 16, 1894, he was in Montevideo forming the Globe Fraternal Accident Association, which insured the I.O.O.F. (Independent Order of Odd Fellows) only.

He must have shuttled back and forth between Minneapolis and Montevideo two or three times in the next few years, because the *Montevideo Advance of*

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June 5, 1896, announced that "Dr. Murphy's goods and family have arrived, and they are looking for a place in which to live."

Shortly thereafter, he bought a sanatorium, for tuberculosis and other respiratory diseases, in Minneapolis. The *Montevideo Commercial* of November 19, 1897, has an article as follows: "There was a bad fire in Dr. Murphy's Sanatorium a few days ago, caused by a burning nebulizer. Dr. Murphy, in his heroic efforts to prevent the fire's spread, and in throwing the nebulizer out of doors, sustained severe burns of the hands and arms. Twenty-two patients were moved to Dr. Rogers' Sanatorium." (Dr. Rogers was a former confrere of Dr. Murphy in Montevideo, and at the time, was running a similar institution in St. Paul.)

In 1899, he had again returned to Montevideo and, in 1900, he took several months of post-graduate work at Rush Medical College, following which, he moved his family to Badger, Roseau County, Minnesota, practicing medicine and conducting a drug-store there for a few years. He moved back to Montevideo in 1906, and again assumed an interest with his brother in the Murphy Drug Store, which he retained until 1919.

It was during this period that I became acquainted with him. He was a delightful man to know, full of wit and humor, and with a gift for anecdote. I greatly enjoyed his stories of his pioneer days. The one that especially impressed upon me the arduous work he had formerly done concerned a prolonged typhoid epidemic one fall. He had so many cases, extending all the way to Benson (over thirty miles), that it would take him all of a day, driving across the prairies and around the sloughs to visit half of them. After spending the night in Benson, the next day, on his return trip, he would visit the remainder. Far into the night he did his work in Montevideo, starting out again the following morning upon a repetition of his two day trip. This epidemic lasted for several weeks. Small wonder he was ready to turn to the less strenuous work of running a drug store.

He moved to Pasadena, California, in 1919 and died there in 1923. His older son, Lloyd, and his daughter, Nelbert Murphy Chouinard, still live in the Los Angeles area.

I have attempted to assemble the biographical sketches of the doctors, who succeeded Dr. Murphy, as nearly as possible in the chronological order in which they located in the county. There were apparently several who settled here for a short time in the 1870's and early 1880's, but information concerning them is meager.

Probably the first to locate after Dr. Murphy, was **Dr. Charles E. Daniels**.

In the *Montevideo Commercial* of August 7, 1887 there appeared, copied from the *Milbank Review*, a story concerning Dr. Daniels, at that time located in Milbank, South Dakota: "Dr. Daniels was born about 1840, and while still only a boy, enlisted in the U. S. Army, February 17, 1865. He was in Company D of Brackett's Indian Battalion, serving under General Sully. During the winter of 1865-66, he acted as scout, chasing Indians, trapping beaver and hunting buffalo all through the region extending from what is now Sioux Falls to Milbank. After his discharge in May, 1866, he returned to Hastings, Minnesota, to finish school, and then went on to college at Hamline University in St. Paul and at Bennett Medical College in Chicago. After graduating from the latter, he located in Goodhue County in 1876, moved to Montevideo, Minnesota in 1878, and to Milbank, South Dakota in 1881." (A professional card in the *Montevideo Leader* of January 14, 1882, but gone by the issue of July 1, 1882, would indicate he moved from Montevideo to Milbank during early 1882.) "He is now 40 years old,

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is president of the Milbank Board of Health, and has enjoyed a lucrative practice for several years."

Evidently Dr. Daniels lived and practiced in Milbank the remainder of his life.

Another doctor who practiced in Montevideo for a short time during this period was **Dr. George E. Dennis**. He was born in Livonia, Michigan, November 27, 1839, and grew up there. He served in the First Michigan Cavalry during the Civil War. In 1868, he moved to Hastings, Minnesota, where he engaged in farming until 1879. He had begun the study of Medicine at home and later worked under the preceptorship of Dr. Hawes of Hastings.

There is no record of any acquaintanceship between him and Dr. Daniels, but both living in a small town the size of Hastings, it is reasonable to assume they were friends and that, when Dr. Daniels decided to leave Montevideo, he induced Dr. Dennis to come here and take his place. At any rate, Dr. Dennis came to Montevideo in 1880 and practiced here until he made enough money to complete his medical education as a homeopathic physician, graduating from Hahnemann Medical College of Chicago in 1883.

His Minnesota license, number 44, dated October 11, 1883, was a very early one.

The *Montevideo Leader* of October, 1882, stated: "Dr. G. E. Dennis leaves for the winter at Hahnemann Medical College, expecting to return in the spring. He has been here for two and a half years and has built up a fine practice, and we regret his temporary absence."

After graduation, he returned to Montevideo, but for only a short time, as he moved to Minneapolis in 1884 and practiced there until his death May 22, 1907. He was one of the better known doctors of Minneapolis during that time, and there are several biographical sketches of him. The best is in a "History of the First Presbyterian Church of Minneapolis," by A. B. Marshall.

Dr. Joseph B. Bacon located in Montevideo at the same time as Drs. Murphy, Daniels and Dennis. He remained for a somewhat longer period, but is not to be confused with **Dr. R. S. Bacon**, who came to the village about the time Dr. J. B. Bacon left, staying here for many years.

Dr. J. B. Bacon was born in Illinois in 1854. He attended Northwestern College of Chicago until 1876, Chicago Medical College until 1878, and the next year graduated from Texas Medical College. He practiced one year at Elliott, Illinois, and was then appointed assistant physician in the Cook County Hospital. Apparently, he did more medical studying during that time, as he is again listed as graduating from Chicago Medical College in 1881. He did not obtain his Minnesota license until December 21, 1883, so he, also, was one of those doctors who practiced without a license prior to the License Law of that year.

He was mentioned in several news items of the Montevideo papers up to the late 1880's. The *Montevideo Commercial* of May 9, 1892, had the following item: "Dr. J. B. Bacon, once a practicing physician here, is now a resident of Chicago. He has associated himself with several other physicians to start a medical school and hospital. Instead of lectures and a dissecting room, students will be given actual work upon patients under competent direction. All demonstrative work will be done at the bedside and classes will consist of but six students."

Dr. Bacon was listed in Polk's Medical Directory as being in Chicago in 1895 and 1898, but in 1903, he was listed from Macomb, Illinois, his name reappearing from there in each issue until 1927. The American Medical Association recorded his death July 21, 1936, with place of residence or death not given.

The listing of the "Causes of Death" for Chippewa County for the year 1881

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makes interesting reading, by comparison with the present, with eighteen deaths under one year of age, ten between the ages of one and five, and only six over the age of sixty. This forcefully points up the change that has taken place in our mortality statistics as our country has grown older, showing an extremely high rate among infants and young children and a very low rate among older people in this report.

<i>Causes of Death</i>	<i>Number of Cases</i>
Diphtheria	13
Consumption	6
Typhoid fever	4
Cholera infantum	2
General debility	2
Spasms	2
Heart disease	2
Accidents	2
Various diseases	10
Not known	15

Accidents seem to have occurred at this time as frequently as at present. Accounts of injuries sustained by run-away horses, or of farmers being gored by bulls appeared in place of our present-day automobile smash-ups or corn-picker tragedies. And, of course, such terms as "black smallpox," "black diphtheria," "typhlitis," "membranous croup" and "pest-house" sound strange to us now.

Dr. Ottul Klaranus Lindboe was located in Chippewa County for only a short time, but he was such an interesting person and he lived for so many years near the village of Lac qui Parle, that he was close enough for Montevideo to claim him as a member of our community. He was born November 16, 1851, in Konsberg, Norway, the son of Andere and Else Lindboe. He there lived until after his confirmation, when he moved to Christiania and worked by day and attended school at night.

After his father's death, his mother, who was a doctor, came with him and his brother to America in April, 1867. The trip took eight weeks and whatever food they needed on the journey they had to prepare themselves. They landed in Quebec and traveled from there to Sarnia, Ontario, overland by ox-cart. Crossing into the United States at Detroit, they took a boat to Chicago, where he worked as a painter during the day, attending night school long enough to learn to speak English.

In July, 1867, he set out with his uncle for the gold fields of Colorado, where he stayed a year and was fortunate enough to pan out about \$5,000. On his return trip, however, he was not so fortunate, because, carrying his money and belongings in a knapsack and sleeping out doors, he awoke one morning to find himself robbed. Reaching Chicago penniless, he found his mother and brother Andrew had bought a drugstore. There he worked, and did painting and helped clean up the debris after the Chicago fire. He wanted enough money to secure an education, so he joined a party and set out upon a second trip to the gold fields. Again misfortune struck. The party was attacked by Indians for nine days and they finally had nothing to eat but raw mule meat. Lindboe was wounded, and for the rest of his life carried the scars of an Indian arrow in his leg and a bullet in his side.

Upon his return to Chicago, he studied pharmacy, and graduated in 1873. But he at once went on to study medicine at Northwestern University for one year, then at Rush Medical College, graduating in 1877. His brother, Andrew, gradu-

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ated from the same school shortly thereafter, and the two started practice together, but Andrew soon contracted tuberculosis and died. After that, Ottul and his mother practiced a short time in Ironwood, Michigan. He came to Minnesota, practicing a short time in the vicinity of Red Wing and Cannon Falls, and, in 1879, was married to Anna Christina Johnson, of Beloit, Wisconsin.

The following year, he and his bride came to Montevideo, but remained only a short time before moving to Lac qui Parle Village, which, at that time, was one of the largest settlements in western Minnesota and reputed to have a population of over nine hundred.

During the winter of 1881, known as the "year of the big snow," Dr. Lindboe had to make his professional calls on snow shoes and skis, the snow being four feet deep on level ground. In later years, Dr. Lindboe liked to reminisce about that first winter, when people lived in sod houses with snow piled so high over them, that the only sign of life was smoke rising from the chimneys, which barely protruded above the drifts. Tunnels were dug between house and barn; slanting shafts were dug down to the house door in order to get in and out; and holes were cut in the barn roof to enter and care for the stock. On several occasions he came home from his calls with frost-nipped hands or feet or face.

After some years of practice with his office in Lac qui Parle Village, Dr. Lindboe began to suffer a great deal from rheumatism. Because of this he bought a farm a short distance north of the village. This he worked as a farmer, but he also administered to the medical needs of his neighbors for many years, and, in the absence of a dentist in the area, extracted many aching teeth. It is interesting to mention that he brought the late Governor Theodore Christianson into the world.

During his life in the community, he served for thirty years on the school board, and many terms on the township and health boards. He was for many years a member of the board of directors of the four-county Riverside Tuberculosis Sanatorium located near Granite Falls.

He was taken sick in January of 1942 and after a three weeks illness passed away February 7, 1942, at the age of ninety.

Dr. and Mrs. Lindboe had five children: one son, Andrew; and, four daughters, Ella (Lund), Clara (Anthony) and twins Elsie and Laura (Dahl). Mrs. Lindboe and Ella had preceded him in death, but his remaining four children, with many grandchildren and great-grandchildren, are living, many of them still in the Lac qui Parle area.

Prior to the year 1881, the only doctors who had located in Chippewa County had settled in Montevideo, but in that year **Dr. Nels Amherst Nelson** began practice in the village of Watson.

Dr. Nelson's parents were born in Norway: his father, Nels Bakken in Narvik, and his mother in Christiania. Nels was born in Lake Mills, Iowa, in 1858, one of a family of six children. He attended elementary school at Lake Mills and college at a small institution in Wisconsin, which was probably Ripon College. His medical education was obtained under the Eclectic School of Medicine in Eclectic Colleges in St. Louis, Missouri, and in Minneapolis, Minnesota. He also attended a post-graduate course at Rush Medical College in Chicago, Illinois, and graduated in 1880.

He moved to Watson, Minnesota, and during the next two years practiced in Chippewa County at Watson and Milan. Later he located in Appleton, Minnesota.

In 1880, he was married to Jennie Boe, a girl who lived a few miles east of Milan. She was born in Lier, Norway, in 1858, and had moved to this country with her parents when she was thirteen years of age, and was living near Milan

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when she met Dr. Nelson. Two children, a son and daughter, were born to their marriage.

Polk's Medical Directory states that Dr. Nelson graduated from the Eclectic Medical College of Des Moines, Iowa, in 1884, but this may be an error, because the *Montevideo Leader*, of September 16, 1882, recorded, "Dr. Nelson was called from Appleton to perform the amputation of an arm. He was assisted by Dr. J. B. Bacon and Nels Bergstrom." There is, of course, the possibility that, like many another physician of his day, he practiced at intervals, interspersed with periods of study in medical school. In any event, graduate or not at the time, he must have attained a considerable degree of skill to be able to do an amputation.

He received his Minnesota license June 25, 1885, and, at about that time, moved from Appleton to Dawson, Minnesota, where he practiced until his death in August, 1929.

He was one of the earliest settlers in that village, moving there at the time the Minneapolis and St. Louis Railroad was extended through Dawson. His residence was the third house built in the town.

For most of his life, he practiced alone. He was a life-long member of the Lutheran Church, and for many years a member of the Masonic Lodge. He also was a charter member of the Camp Release District Medical Society, and attended its meetings regularly and did a great deal of community welfare work. For many years he was village Health Officer. He had a wonderful bedside manner with his patients.

His outside interests were in hunting and fishing, and he was especially fond of violin music, of playing the violin himself, and of singing.

One sister and two brothers survive him, as well as his son and daughter. His son, Dr. Melvin S. Nelson, has been practicing medicine in Granite Falls, Minnesota most of his professional life, and is one of the oldest and best known doctors in western Minnesota.

Dr. Hans J. G. Koren is another physician who appears to have been practicing in Montevideo at the time of his licensure, December 28, 1883. He was born in Norway, and received his medical education at King Frederick University, graduating in 1869. He must have practiced in Norway for several years, because his son, Finn, later to become a Chippewa County doctor, was listed as having been born in Norway in 1873. Some time between 1873 and 1883, Dr. Koren moved his family to this country and settled in Montevideo, where he practiced, probably until Finn graduated from Windom Institute in the class of 1891. He and Mrs. Koren must then have returned to Norway for several years, because in the *Montevideo Commercial* of November 12, 1897, we find this item: "Dr. and Mrs. H. J. Koren, formerly of this village, who have been living in Norway for several years, are returning to the U. S. They will locate in Lamberton, Minnesota."

The *Montevideo Leader* of November 3, 1899, had the following: "Dr. H. J. Koren, formerly of this village, but later of Lamberton, died October 31, 1899, at St. Barnabas Hospital, Minneapolis, Minnesota, of appendicitis and resulting peritonitis, after six days' sickness. Pallbearers will be classmates from the University of Norway. Mrs. Koren will reside with her son, Finn, who is studying medicine at the University of Minnesota."

We next come to one of the most interesting personalities we will encounter in the history of the county, **Dr. Charles E. Rogers**. All the evidence seems to indicate that he was a man of strong convictions, boundless ambition and un-

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limited energy. There were no half-way measures with him. People were either his very good friends or his enemies. He lived and practiced off and on in Montevideo for thirty years, and during that time, exerted a powerful influence upon the community.

Charles Emory Rogers was born in Jefferson, Ohio, October 1, 1850, the son of Henry and Melinda Hoyt Rogers. Both of his parents were born in New York. When a lad, his family moved to Mauston, Wisconsin, where he obtained his elementary schooling. He followed this, by attending business college, teaching country school for a while, and later becoming part owner and teacher in a business college in La Crosse, Wisconsin. He was married to Rose Turner, of Mauston, at Wisconsin Dells in 1870.

He remained at La Crosse several years, and during that interval took up the study of medicine under the tutelage of Dr. Knut Hoegh, at that time, one of the best known surgeons west of Chicago. This was followed by a regular course of medical study at the Bellevue Hospital Medical College in New York City. After graduating in 1880, he returned to La Crosse and became associated with Dr. Hoegh. During this time, he was made a surgeon in the Third Regiment of the Wisconsin National Guard, with the rank of major.

An old boyhood friend from Mauston, H. E. Hoard, in the meantime, had settled in Montevideo, and had bought the *Montevideo Leader*, of which he was manager and editor. Later he was elected to several terms in the State Legislature.

Undoubtedly, as the result of this friendship, Dr. Rogers was induced to locate in Montevideo, which he did in the late fall of 1882.

Almost immediately he became a leader in the community. He was appointed surgeon of the C. M. and St. Paul (Milwaukee) Railroad, in which capacity he served until his death. He was a member of the State Medical Board for many years and for a number of years, was a teacher of anatomy, physiology and hygiene in Windom Institute. At various times he was a member of the village council and a director of the Citizen's State Bank.

(To be continued)

THE DEAN'S PAGE

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medical practice. The return of the Medical Library to the Medical Campus will make this possible. We most earnestly hope, therefore, that the 1955 Legislature will make the appropriation requested for this purpose.

Additional funds for remodelling and equipment of the University Hospitals and Mayo Memorial are needed because large areas, such as the operating rooms, x-ray department, clinical and research laboratories and departmental and administrative offices were removed from the hospital into the new building. The areas thus vacated need to be remodelled into rooms and wards for patient care. In addition, much of the plumbing and electrical work in this old building needs replacement, and considerable areas of the Outpatient Clinic need reconditioning and modernization.

The medical faculty will appreciate any assistance in the support of these appropriations which the physicians of the state are able to give.

HAROLD S. DIEHL

In Memoriam

WILLIAM H. GOECKERMAN

Dr. William Goeckerman, member of the Mayo Clinic staff from 1921 to 1932, died November 8, 1954, in Los Angeles. He was seventy years old.

Dr. Goeckerman was born in Hanover, Germany, and received his medical degree from the Wisconsin College of Physicians and Surgeons in Milwaukee. He entered the Mayo Clinic as an assistant in dermatology and syphilology in 1917 and became an associate in 1921. He was also associate professor of dermatology in the Mayo Foundation. He practiced in Los Angeles upon leaving Rochester and was consultant at St. Vincent's Hospital and the California Hospital and clinical professor of medicine at the University of Southern California.

During his stay in Minnesota, Dr. Goeckerman was a member of his county medical society and of the Minnesota State Medical Association and the American Medical Association. He was also a member of the American Dermatological Association and many other scientific associations.

Surviving are his wife, the former Magdalena S. Moore, and several brothers.

JOHN FRANCIS NORMAN

Dr. J. F. Norman, of Crookston, died at the age of seventy-four in his home at Crookston on November 29, 1954. Dr. Norman was founder of the Crookston Clinic and was still actively associated with it. He died suddenly after a cerebral hemorrhage which occurred while he was putting on his overshoes to return to the clinic at noon.

Dr. Norman had been a leader in medical affairs in Minnesota for many years. He served as president of the Minnesota State Medical Association in 1951 and had been elected to all of the offices that his local and district medical organizations could bestow.

He was a member of the board which established the Blue Shield program in Minnesota and was a member of the American Medical Association as well as his local Red River Valley Medical Society and the state association. He was also a long-time member of the American College of Surgeons and a member of Rotary.

Born in Henderson, Dr. Norman taught school for five years in order to earn funds to go to college. He was graduated from Hamline University Medical School shortly before the school became part of the University of Minnesota Medical School in 1905. He served his internship at St. John's Hospital in Fargo, North Dakota, and later did some postgraduate work in Europe.

He is survived by his wife, the former Loretta Malone; two sons, Dr. David D. Norman, 1883 Goodrich Avenue, St. Paul, and Nelson F. Norman, Ph.D., Fresno State College, California; a daughter, Mrs. H. R. Perry, Santa Fe, New Mexico; a sister, Mrs. Mae Working; and seven grandchildren.

WILLIAM HENRY ROWE

Dr. William H. Rowe, seventy, died December 2, 1954, in Fairmont where he had practiced eye, ear, nose and throat work since 1935.

Dr. Rowe was the son of a physician who practiced in St. James, where he was born in 1884. He went to school in St. James and obtained a bachelor of arts degree at the University of Minnesota and a medical degree from Rush Medical College of Chicago in 1909. He served his internship at St. Mark's Hospital in Salt Lake City and took a year of post-graduate work at Knapp Memorial Hospital and Roosevelt Hospital in New York City. He practiced at St. James from 1910 to 1922 and in Minneapolis from 1922 to 1934.

In 1935 Dr. Rowe moved to Fairmont and remained there until his death.

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medical schools. The contribution was received by Louis H. Bauer, M.D., president of the foundation, who also announced that a check for \$1,000 had been contributed by the Southern Medical Association.

1957 Clinical Meeting

Philadelphia was chosen as the place for the 1957 Clinical Meeting, the dates of which will be announced later. Invitations also had been received from Denver, Detroit, Mexico City and Washington, D. C. The Clinical Meeting will be held in Boston in 1955 and in Seattle in 1956.

Health Fair

As the AMA Clinical Meeting came to a close on Thursday, December 2, a health fair for the public opened in Miami's Bayfront Auditorium under the auspices of the Dade County Medical Society. The fair, to be open through Sunday with more than eighty exhibits featured, marks the first time that such an event has been held in connection with the AMA Clinical Meeting.

J. ARNOLD BARGEN, M.D., Rochester
O. J. CAMPBELL, M.D., Minneapolis
GEORGE EARL, M.D., Saint Paul
F. J. ELIAS, M.D., Duluth
(Delegates to the American Medical Association)

Woman's Auxiliary

WORKING TOGETHER FOR HEALTH AND SAFETY

MRS. DAVID J. HALPERN
Brewster, Minnesota

First, I would like to congratulate Martin county for its splendid hospital auxiliary. You are the group who volunteer your services to the hospital. You are the ones on whom the administrator can call to raise funds for your hospital. You—who are well informed about the needs and facilities of your hospital—can go out among your friends and organizations and give them the correct information and thus create good will toward your hospital and an appreciation of the hospital as a community enterprise. Through education, information and service you are working for better hospital care for the people of your community. The greatest gift an individual can give to her community is a "little bit of herself."

The purpose of the medical auxiliary is health education and service. Hence, it seems very fitting that these two groups should have a joint meeting.

The United States has the world's highest standards of health and medical care. It is the world center of medical education and research. This has been accomplished by physicians with the co-operation and help of allied professions, branches of science, nurses, hospitals, etc. In fact, through the help of many branches of American society.

We know that many dread diseases that once were killers (typhoid, diphtheria, small pox, pneumonia and many others) have been brought under control. Yet, we do very little about the *unnecessary* deaths—those killed by accidents. Just this last weekend there were fourteen highway deaths in our own state of Minnesota. There were 38,000 highway deaths in our nation last year. This is more than the number killed in the Korean war. I haven't the figures, but if we were to add to those the number killed in farm, home and industry accidents, I am sure the number would be startling.

Think, too, of the millions who are injured—to say nothing of the economic loss. It makes us realize that safety, as a health measure, should be stressed. It is only a short step from carelessness to danger. The medical auxiliary is placing its accent on home and playground accidents. There is a definite place for each of you in this community action. Saving *healthy* lives is as important as saving *diseased* ones.

All of us are interested in well-trained personnel for our hospitals. You might interest the young people in your own family in the nursing profession. The shortage includes, besides registered nurses, practical nurses, medical record librarians, x-ray and laboratory

Presented at a combined meeting of the Martin County Hospital Auxiliary and the Auxiliary of the Minnesota State Medical Association, Fairmont, Minnesota, October 13, 1954.

Mrs. Halpern is recording secretary, Woman's Auxiliary to the Minnesota State Medical Association.

technicians, dietitians, physical and occupational therapists, health educators, etc. Boys, as well as girls, should play an important part in filling these positions. You might interest high school students in these professions through teas, a panel discussion made up of nurses and those in the allied professions. You might tour your local hospital. You might see that nursing and allied professions are included if you have high school career days. You might sponsor essay or poster contests.

Another field in which we should all co-operate and work together on is civil defense. Our Auxiliary bulletin says: "Effective mass public education is the key to national survival—if war should come, women know that "a stitch in time saves nine." Are we, as women, delaying in taking the needed stitch? Many skilled and willing hands are needed. Points we are asked to stress are these:

"1. Home protection exercises. Every woman's first duty in the civil defense program is to educate her family in self protection against modern weapons and to make her home as safe as possible against both the dangers of enemy attack and disasters such as fire, flood, tornado.

"2. Home nursing classes.

"3. Education in the areas of sanitation, mass feeding, and temporary housing.

"4. Co-operation with the medical profession in preparedness."

We can each continue to render our valuable assistance to the Red Cross blood program. As you know, this program not only provides gamma globulin for polio, measles and hepatitis, but also furnishes free blood to our hospitals for community use.

The American Cancer Society, Heart association and other such agencies deserve the support of all Americans.

You can volunteer your services for the various types of testing in schools such as Mantoux test for immunization programs. You can help at the clinics for crippled children, at diabetic surveys.

These are a few of the fields in which you can help as volunteers. Someone said, "It is hard to imagine American life minus its volunteers. Let's hope they never go on 'strike'."

We, who are members of the Hospital Auxiliary and the Medical Auxiliary, should all work together for the health and safety of our community. I would like to close with an expression from India: "He who would leave footprints in the sands of time must wear work shoes."

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Reports and Announcements

MEDICAL MEETINGS

State

MINNESOTA STATE MEDICAL ASSOCIATION, annual meeting, Minneapolis, May 23-25, 1955.

National

American Cancer Society, Board of Directors and special committee meetings, Hotel Radisson, Minneapolis, June 2, 1955.

American College of Surgeons, sectional meeting, The Fort Harry, Winnipeg, Manitoba, Canada, April 25-26, 1955.

American Medical Association, annual meeting, Atlantic City, New Jersey, June 6-10, 1955.

Conference on Reserpine in the treatment of neuro-psychiatric, neurological and related clinical problems. Barbizon-Plaza Hotel, New York City, February 3-4, 1955.

International

International College of Surgeons, United States Section, Southwestern Division regional meeting, Shamrock Hotel, Houston, February 28-March 1, 1955.

Inter-American Congress of Radiology, Shoreham Hotel, Washington, D. C., April 24-29, 1955.

International Hospital Congress, Lucerne, Switzerland, May 30-June 3, 1955.

International Symposium on Cardiovascular Surgery, Henry Ford Hospital, Detroit, March 17-19, 1955.

AMERICAN ACADEMY OF FORENSIC SCIENCES

The Seventh Annual Meeting of the American Academy of Forensic Sciences will be held in the Biltmore Hotel in Los Angeles on February 17-19, 1955. The president of the Academy this year is Dr. A. W. Freireich, Malverne, New York, and the chairman of the Program Committee is Dr. Milton Helpern, Chief Medical Examiner of New York City. The law department of the American Medical Association has long urged that the profession take an increasing interest in medicolegal problems and the programs of the Academy meetings are a definite step in that direction. Further information may be obtained by writing Dr. W. J. R. Camp, University of Illinois College of Medicine, 1853 W. Polk Street, Chicago, Illinois, secretary, or Dr. Frederick D. Newbarr, 109 Hall of Justice, Los Angeles 12, California, chairman of local committee on arrangements.

FAMILY DOCTORS' DAYS

at the

University of Minnesota Hospitals

All physicians are cordially invited to attend the following Family Doctors' Days which will be presented under the direction of the department indicated.

January 19—Hospital Administration
February 16—Division of Anesthesiology
March 16—Division of Urology
April 20—Division of Neurosurgery

Activities begin with luncheon at 12:15 noon with the staff of the Department in the Hospital Dining Room and will continue throughout the afternoon.

For further information, write the head of the department concerned or the Director, Department of Continuation Medical Education, University of Minnesota Hospitals.

AMA COUNCIL ON EDUCATION AND HOSPITALS

The Council on Medical Education and Hospitals of the AMA is planning a program on the subject of "The Potential Use of Television in Postgraduate Medical Education" to be presented as a full-day working conference on February 5, 1955, in the ballroom of the Palmer House, Chicago. This is expected to be the first of a series of annual "workshop" type conferences on one particular aspect of postgraduate medical education. Television is the subject of the first meeting because of the extreme interest in this medium that has been shown recently, as well as its pertinence to the future of postgraduate education.

The program is planned in such a way as to present both the educational and technical aspects of the subject, so that medical educators and medical society, hospital and specialty society representatives at the meeting will be able to obtain a broad picture of the medium and help them to determine whether or not it is something they might use in their own programs, and if so the problems involved in its use.

Following a keynote address by Dr. John Cline, the morning session will be devoted to considerations of the purely educational aspects of the medium. The afternoon session will deal with technical considerations and financing. The participants will be drawn from the fields of general education, television, industry, medicine, medical education, pertinent government agencies and others. It is planned to have a number of demonstrations in the afternoon session using actual camera chains and receiving equipment. Following the session it will be possible for the audience to examine these and observe some of them in further action, and visit a local television station in action.

REPORTS AND ANNOUNCEMENTS

POSTGRADUATE COURSE ON DISEASES OF THE CHEST

The Council on Postgraduate Medical Education of the American College of Chest Physicians, in co-operation with the respective state chapter of the College as well as the staffs and faculties of the local hospitals and medical schools of Philadelphia, will sponsor the Eighth Annual Postgraduate Course on Diseases of the Chest, to be held at the Bellevue-Stratford Hotel, Philadelphia, Pennsylvania, March 7-11, 1955.

Our postgraduate courses endeavor to bring physicians up to date on recent advancements in the diagnosis and treatment of heart and lung disease. Tuition is \$75.

Further information may be secured by writing to the Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

ESSAY AWARD CONTEST

The Council on Undergraduate Medical Education of the American College of Chest Physicians offers three cash awards to be given annually for the best contribution, prepared by any undergraduate medical student studying for a degree in medicine, on any phase of the diagnosis and treatment of chest diseases (heart and/or lungs).

The first prize will consist of a cash award of \$250. Second prize will be \$100 and third prize, \$50. The three winners will also receive a certificate of merit.

The winning contributions will be selected by a committee of well-known chest specialists and will be announced at the 21st annual meeting of the American College of Chest Physicians, to be held in Atlantic City, New Jersey, June 2-5, 1955. All manuscripts become the property of the American College of Chest Physicians.

Applicants are requested to study the format of *DISEASES OF THE CHEST* as to length, form, and arrangement of illustrations to guide them in the preparation of the manuscript. The following conditions must be observed:

1. Five copies of the manuscript typewritten in English (double spaced) should be submitted to the Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois, U.S.A., not later than April 10, 1955.

2. The only means of identification of the author shall be a motto or other device on the title page and a sealed envelope bearing the same motto on the outside enclosing the name and address of the author.

3. A letter from the Dean or Chairman of the Department of Medicine of the medical school certifying that the author is a medical student studying for his degree in medicine.

LECTURES AND DISCUSSIONS ON CURRENT MEDICAL PROBLEMS

The Mayo Clinic and Mayo Foundation announce a four-day program, April 19 to 22, inclusive, of lectures and discussions on problems of current interest in the general fields of medicine and surgery. The number of physicians and surgeons who can be accommodated is

necessarily limited. Those wishing to attend should communicate with Dr. N. W. Barker, Mayo Clinic, Rochester, Minnesota, before March 1, 1955. Applications will be honored in the order in which they are received. There is no registration fee.

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

A regular meeting of the Minnesota Society of Neurology and Psychiatry was held January 11 at the Town and Country Club. Dinner at 6:30 p.m. followed a social hour. During the evening, Dr. James H. Lyons and Dr. Ian A. Brown were voted into the Society as active members. The scientific program included two topics, "Modern Treatment of Brain Abscess" by Harold F. Buchstein, M.D., and "Children's Inpatient Psychiatry Service" by Reynold A. Jensen, M.D.

MINNESOTA TUBERCULOSIS AND HEALTH ASSOCIATION

The changing problem in tuberculosis and new measures of tuberculosis control were the topics discussed by James J. Waring, M.D., professor of medicine, emeritus, University of Colorado, Denver, Colorado, and Howard M. Payne, M.D., professor in medicine, Howard University College of Medicine, Washington, D. C., at the annual meeting of the Minnesota Tuberculosis and Health Association, October 11, 1954.

The meeting emphasized the importance of the Christmas Seal sale, which opened November 22, in supporting an expanded program in the fight against tuberculosis. The officers of the Minnesota Tuberculosis and Health Association who were re-elected are as follows:

President—Ray M. Amberg, Saint Paul
First Vice-President—Montreville J. Brown, Saint Paul
Second Vice-President—Mrs. H. E. Johnson, Stillwater
Secretary—W. H. Valentine, M.D., Tracy
Treasurer—T. C. Macoubrey, Saint Paul
Executive Secretary—E. A. Meyerding, M.D., Saint Paul

CONTINUATION COURSES

The University of Minnesota announces a continuation course in *Clinical Dietetics for Dietitians* which will be held at the Center for Continuation Study next March 3 to 5, 1955. Recent advances in medicine and their relationship to the field of dietetics will be taken up. The course will be presented under the direction of Gertrude Thomas, director of Nutrition and professor of Dietetics, University of Minnesota.

* * *

The University of Minnesota announces a continuation course in *recent advances in internal medicine for internists* which will be presented at the Center for Continuation Study from February 14-16, 1955. This year's course will deal with various aspects of hema-

REPORTS AND ANNOUNCEMENTS

tology, cardiology, endocrinology, and respiratory physiology. The course will be presented under the direction of Dr. C. J. Watson, professor and director, Department of Medicine.

* * *

A continuation course in *clinical hematology for physicians* will be presented by the University of Minnesota at the Center for Continuation Study from February 28 to March 2, 1955. Registrants will be provided with slides for study during the course showing examples of various blood cell types and of the more frequent hematological diseases. Lectures will include discussions of the anemias, the leukemias, and coagulation defects. Registration will be limited.

RANGE MEDICAL SOCIETY ELECTS

Dr. T. R. Schweiger of Hibbing was elected president of the Range Medical Society when the group met last month in Hibbing. Dr. John S. Siegel of Virginia was named vice president and Dr. Kenneth Ahola of Hibbing was chosen secretary. Dr. M. J. McKenna of Grand Rapids is retiring president. Speaker for the scientific session was Dr. Erick Lepo of Duluth, who talked on "Toxoplasmosis."

SAFETY CLINIC HELD IN SAUK CENTRE

Farm and highway accidents, their cause and prevention, were studied at a six-county safety clinic held in December at Sauk Centre. Speaking at the clinic, the first such area-wide program, were Dr. H. H. Young of the Mayo Clinic, Rochester, who spoke on "The Seriousness of Farm Accidents"; Earl M. Larimer, director of highway safety with the State department of highways, who talked on the topic, "Your Responsibility in Traffic." The program was sponsored by the Sauk Centre Safety Council and the Citizens Advisory committee.

ST. LOUIS COUNTY SOCIETY MEETS

Dr. A. J. Bianco, Sr., of Duluth, was named president-elect of the St. Louis County Medical Society at the December meeting of the group. Dr. Bianco will serve in 1956. Installed as president for 1955 was Dr. K. R. Fawcett, Duluth, who succeeds Dr. Sam Boyer, Jr., Duluth. Elected vice president was Dr. Paul Reed of Virginia. Dr. J. E. Haavik, Duluth, was named secretary-treasurer. Dr. K. E. Johnson, Duluth, was elected to the society's Advisory Committee, where he will serve with Drs. M. J. Fellows and J. J. Coll, both of Duluth. On the State Advisory Committee will be Drs. Boyer, C. M. Bagley and P. F. Eckman, all of Duluth. New members of the Judiciary Committee are Drs. A. G. Athens, G. C. MacRae, and D. W. Wheeler, all of Duluth, who were elected for 1957. Serving in 1955 will be Drs. Richard Bardon, F. H. Magney and L. W. Morsman, Duluth, and serving in 1956 will be Drs. A. J. Bianco and F. J. Hirschboeck, of Duluth, and F. R. Kotchevar of Eveleth. On the Economics Committee

new members are Drs. M. G. Fredricks, H. O. Hoff and O. E. Sarff, all of Duluth. The 1955 committee is made up of Drs. E. C. Bagley and J. J. Coll, Duluth, and L. W. Johnsrud, Hibbing, with Dr. C. M. Bagley and P. G. Boman, Duluth, and Paul Reed, Virginia, serving in 1956.

Grievance Committee members are: Drs. J. C. Feuling, Duluth, and M. J. McKenna, Grand Rapids, 1957; Drs. L. L. Merriman, Duluth, and R. H. Puumala, Cloquet, 1955; and Drs. M. G. Gillespie, Duluth, and P. S. Rudie, Duluth, 1956.

The society elected Dr. R. P. Buckley, Duluth, as 1957 delegate, with Dr. Josiah Fuller, Duluth, as alternate. Delegates in 1955 will be Drs. Gillespie and MacRae, with Drs. P. G. Boman and R. C. Pedersen, Duluth, as alternates. In 1956 Drs. Clarence Jacobson, Chisholm, and W. S. Neff, Virginia, will be delegates, with Drs. J. K. Butler, Cloquet, and G. M. Erskine, Grand Rapids, as alternates.

TRI-COUNTY MEDICAL SOCIETY ELECTION

Dr. Donald E. Dille of Litchfield was elected new president of the Kandiyohi-Swift-Meeker County Medical Society at a recent meeting in Willmar. He succeeds Dr. R. P. Griffin of Benson. Dr. Harold Wilmot and Dr. Karl Danielson, both of Litchfield, were named as delegate and alternate, respectively, to the Minnesota State Medical Association meeting.

WOMAN'S AUXILIARY

(Continued from Page 68)

RAMSEY COUNTY REPORTS ACTIVITIES

Chairman of Medical and Surgical Relief, Mrs. H. F. Schroeckenstein, reports the packing and sending of twenty-six cartons of medical supplies in November to the Central Conference of the United Lutheran church. In December the same committee sent 22 cartons to the Maryknoll Missions.

Mrs. Harold F. Flanagan represented the Auxiliary at a meeting in November of the Woman's Auxiliary to the Jewish Home for the Aged for the Northwest.

On December 7, Mrs. J. E. Teisberg and other auxiliary members staffed Christmas seal booths in the downtown stores and public buildings. Judging of Tuberculosis Essays for high school students took place on November 17, and Radio Project awards were presented to Judy Lewis, local junior winner, and to Joan Lachemayer, local senior winner, both of St. Agnes High School. State winners were Judy Lewis, first place in the junior division, and Barbara Sitzman, first place in the senior division. Miss Sitzman is also from St. Agnes High School. The essays were read at the January meeting of the Auxiliary. A film on rehabilitation was shown. The auxiliary also elected a nominating committee at this meeting.

MRS. L. T. SIMONS

Of General Interest

Dr. Elizabeth B. Jerome and **Dr. Henry P. Staub**, both of Minneapolis, have been elected to fellowships in the American Academy of Pediatrics.

* * *

A display of old medical instruments used by pioneer physicians of Itasca County has been prepared for a historical room in Grand Rapids by **Dr. M. J. Schirber**, Grand Rapids. The historical collection is sponsored by the Itasca County Historical Society and the Old Settlers organization. Medical instruments used by **Dr. Thomas Russell** and **Dr. H. E. Binet** are among those displayed.

* * *

A number of Minnesota physicians attended sessions of the 40th annual clinical congress of the American College of Surgeons in Atlantic City, New Jersey, in November. Rochester doctors who were on the program included **Drs. J. M. Waugh, O. S. Culp, H. K. Gray, J. W. Henderson, H. J. Moersch, J. L. Bollman, J. B. Erich, G. A. Hallenbeck, K. A. Loegren, C. A. Owen, Jr., J. C. Cain, O. H. Beahrs, B. Marden Black, W. H. Hollinshead, R. K. Ghormley, J. C. Ivins, E. H. Soule and H. H. Young**. Also in attendance were **Drs. E. A. Banner, J. H. Grindlay and J. W. Kirklin**, all of Rochester, **Dr. David J. Sanderson** of Fergus Falls, **Dr. Robert R. Cooper** of Minneapolis, and **Dr. R. F. Hedin** of Red Wing.

* * *

Representing the Minnesota State Medical Council at sessions of the North Central Medical Conference at St. Paul in November was **Dr. C. L. Oppegaard** of Crookston. The conference is made up of membership from Iowa, Minnesota, Nebraska, North and South Dakota and Wisconsin. Dr. Oppegaard, with Mrs. Oppegaard, also attended the interim meeting of the American Medical Association in Miami, Florida.

* * *

Dr. Paul M. Brickley, formerly a consultant in the Department of Ophthalmology, Mayo Clinic, has joined the staff of the Sansum Clinic, Santa Barbara, California.

* * *

The American Academy of Pediatrics, Chicago, has announced the election to membership of **Dr. Robert O. Bergan** of the Duluth Clinic.

* * *

Capt. I. L. V. Norman, former Willmar resident, has been selected for promotion to rear admiral. Admiral Norman commands the United States naval hospital at Great Lakes, Ill. He is a graduate of the University of Minnesota, and has been on active duty since receiving his medical degree in 1927.

* * *

Dr. A. E. Ritt, has been elected president-elect for 1956 of the Ramsey County Medical Society. Presi-

dent for 1955 is **Dr. Harold F. Flanagan**. **Dr. E. C. Gibbs** has been named secretary-treasurer for 1955. Retiring president is **Dr. Wallace P. Ritchie**.

* * *

Three Northfield physicians have been reappointed to the Rice County nursing board by the county board of commissioners. Reappointed members include **Dr. Robert F. Mears**, **Dr. Donald H. Petersen** and **Dr. Leonard Aamodt**.

* * *

Speaker at the interim scientific session of the American Trudeau Society recently in New York City was **Dr. R. D. Miller** of Rochester.

* * *

Seven Minnesota medical men have been made Fellows of the American College of Surgeons. The induction ceremony took place at the group's five-day clinical congress in Atlantic City. Nearly 1,000 surgeons were made Fellows in the Academy, which is the world's largest organization of surgeons. Minnesotans inducted include **Dr. William C. Bernstein**, St. Paul; **Dr. Manuel R. Binder**, **Dr. Llewellyn E. Christensen**, **Dr. Robert R. Cooper** and **Dr. Owen F. Robbins**, all of Minneapolis; **Dr. Josiah Fuller** of Duluth, and **Dr. David J. Sanderson** of Fergus Falls.

* * *

Dr. C. S. Bossert, Mora physician, was honored at a dinner last month sponsored by the Mora Commercial and Civic clubs. Dr. Bossert has completed more than 40 years of service in Kanabec county and the surrounding area.

* * *

Dr. Daniel H. Bessesen, Buffalo Lake, formerly Minneapolis physician, has been elected chief of the medical staff of Renville County Hospital at Olivia.

* * *

A member of a panel discussing cardio-pulmonary laboratory work at the eighth Postgraduate Assembly in Anesthesiology at the Hotel New Yorker last month was **Dr. H. F. Helmholz, Jr.** of Rochester, associate professor of physiology in the Mayo Foundation.

* * *

At home on Crystal Bay, Lake Minnetonka, are **Dr. and Mrs. Winston Rudolph Lindberg**. Mrs. Lindberg is the former Larey Evans, daughter of **Mr. and Mrs. Walter Sale Evans** of Mendenhall, Mississippi. Dr. Lindberg's parents are **Dr. and Mrs. Arvid C. Lindberg** of Minneapolis. Dr. Lindberg has practiced in Minneapolis since his graduation from the University of Minnesota Medical School.

* * *

Dr. H. J. Moersch presented a paper at the interim session of the College of Chest Physicians. The meeting was held in conjunction with the semi-annual meeting of the board of regents of the Col-

OF GENERAL INTEREST

lege in Miami Beach in December. Dr. Moersch also gave a paper before the Cuban chapter of the American College of Chest Physicians meeting in Havana.

* * *

Dr. Grant L. Garlock has announced the opening of offices for the general practice of medicine and surgery at 509½ Beltrami Avenue in Bemidji.

* * *

Dr. Willard White of Minneapolis addressed the Scott-Carver County Medical Society at its December meeting at Shakopee. The subject of Dr. White's talk was "Intramedullary Fixation of Fractures."

* * *

Dr. W. F. Maertz, formerly of St. Paul, has been a staff member of St. Peter State Hospital at St. Peter, Minnesota, since June, 1954.

* * *

Dr. C. H. Mead and **Dr. E. I. Parson**, who have been associated for a number of years in the practice of general surgery in Duluth, have announced the formation of a partnership for continuation of their practice.

* * *

At the annual meeting of the Park Region District Medical Society held at the River Inn, Fergus Falls, in December, 1954, the guest speaker was **Dr. Merrill D. Chesler** of Minneapolis. His topic was "Skin Grafts and Flaps in Reconstructive Surgery."

* * *

Recently certified as a specialist in orthopedic surgery by the Royal College of Surgeons of Canada is **Dr. A. Ross Lerner** of Minneapolis. Dr. Lerner recently passed the oral and written examinations held in Canada.

* * *

Among Minnesota physicians attending an interim session of the American Medical Association in Miami, Florida, recently were **Dr. Jack Delmore** of Roseau, **Dr. R. R. Wright** and **Dr. F. H. Rosenthal** of Austin and **Dr. E. R. Hudec** of Echo.

* * *

Dr. John A. Anderson, a University of Minnesota graduate and professor of pediatrics at Stanford University, has been named head of the University of Minnesota pediatrics department to succeed **Dr. Irvine McQuarrie**. Dr. McQuarrie, who taught the new department head his specialty, will devote his time to medical training and research. Dr. Anderson is a native of Sioux Falls, South Dakota, and is a member of nearly a dozen medical and professional organizations, a diplomate of the national medical board and of the American Board of Pediatrics and a writer and editor in the pediatric field.

* * *

Captain Raymond J. Lindeman, Air Force medical officer and commanding officer of the 615th Infirmary at Ent Air Force Base, has received his flight surgeon's wings. Captain Lindeman is a graduate of the University of Tennessee, and took specialized training at the School of Aviation Medicine at Randolph Field, Texas.

Dr. James Thomson of Austin recently attended a reunion at Cook County Hospital in Chicago. Dr. Thomson took four years of study and training in obstetrics and gynecology at the University of Chicago Lying-in-Hospital and Cook County Hospital.

* * *

Featured speaker at Minnesota Farm and Home Week activities this month at the University of Minnesota was **Dr. Walter C. Alvarez**, former Mayo Clinic staff member and medical writer and lecturer. Other prominent speakers included Governor-elect **Orville L. Freeman** and **Ezra Taft Benson**, secretary of agriculture.

* * *

Dr. R. B. Skogerboe of Karlstad has made plans to take a year of graduate work in surgery at Abbott Hospital, Minneapolis. Dr. Skogerboe will continue his work with **Dr. B. R. McHardy** at the Karlstad Clinic.

* * *

A number of Mayo Clinic staff members presented papers before various groups in December. **Dr. L. M. Eaton** participated in the National Conference of the Myasthenia Gravis Foundation at the University of Pennsylvania School of Medicine in Philadelphia and **Drs. R. G. Bickford** and **H. M. Keith** presented a combined paper at the meeting of the American League Against Epilepsy in New York City. **Dr. A. G. Karlson** gave a paper as part of the short course on diseases of laboratory animals, which was given by the Armed Forces Institute of Pathology in Washington, D. C.

* * *

A Minneapolis surgeon and former president of the Minnesota State Medical Association, **Dr. O. J. Campbell**, has been named to succeed **Dr. Arthur A. Zierold** as chief of the surgical staff at Minneapolis General Hospital. Dr. Zierold resigned in November.

* * *

Dr. C. A. McNeely, who recently opened private practice in Herman, has closed her offices. She has announced no future plans.

* * *

A Waseca physician since 1951, **Dr. S. T. Normann**, has purchased the medical offices of **Dr. H. M. McIntire** of Waseca, who retired last summer. Dr. Normann has had his offices with **Dr. B. J. Gallagher** and **Dr. R. D. Davis**.

* * *

Ten members of the Mayo Clinic staff were among those attending the joint meeting of the American Academy of Obstetrics and Gynecology and the Sixth Annual American Congress of Obstetrics and Gynecology in Chicago in December. **Dr. L. M. Randall**, program chairman, led a conference and **Drs. E. A. Banner**, **J. E. Faber**, **M. E. Giffin**, **J. S. Hunter**, Jr. and **J. H. Pratt** conducted conferences and led round-table discussions. Drs. Faber, Giffin and Hunter presented papers and **Dr. A. B. Hunt** attended a meeting of the section officers. Others attending were **Drs. C. E. Johnson**, **M. E. Mussey** and **R. A. Smith**.

OF GENERAL INTEREST

Dr. T. S. McClanahan has been named chief of staff at St. John's Hospital for 1955. Dr. R. W. Emmons was elected first vice chief and Dr. P. G. Polski, second vice chief. Dr. J. W. Strand was named secretary-treasurer of the staff. Also named to the executive committee for a three-year term at the December staff meeting were Dr. Polski and Dr. F. J. Plondke.

* * *

Some 1,000 friends honored Dr. and Mrs. M. A. Burns of Milan on their fiftieth wedding anniversary December 21. The open house was held at the Kviteside Lutheran church, Milan. Dr. Burns, now over eighty years old, is still in active practice in Milan, where he and his wife have resided for over fifty years. For the past several years Dr. Burns has been associated with his son, Dr. Floyd M. Burns.

* * *

Five Mayo Clinic staff men attended the December session of the Radiological Society of North America in Los Angeles. Conducting courses were Dr. D. S. Childs, Jr. and Dr. G. D. Davis. Dr. J. R. Hodgson presented a paper and an exhibit. Also in attendance were Dr. C. B. Holman and Dr. Martin VanHerik.

* * *

Recently named to the board of governors of the Minnesota Society of Obstetrics and Gynecology was Dr. Jack R. Pierce of the Lenont-Peterson Clinic in Virginia. Dr. Pierce also presented a paper on infant mortality in Virginia at the December meeting of the Society.

* * *

Fourteen members of the Mayo Clinic staff attended the interim session of the American Medical Association in Miami last month. Among those attending meetings of the House of Delegates were Drs. E. V. Allen, J. A. Bargen, F. H. Krusen, L. A. Buie and R. R. Kierland. Dr. Buie is also a member of the Judicial Council and chairman of the Council on Constitution and By-laws. Presenting exhibits at the meeting were Dr. T. T. Myers, R. L. Parker, H. F. Polley and E. W. Johnson. Dr. J. L. Emmett presented a paper. Also at the meeting were Dr. Victor Johnson, a member of the Council on Medical Education and Hospitals, and Drs. W. McK. Craig, J. W. DuShane and N. O. Hanson.

* * *

Dr. E. C. Sargent of the Austin Clinic attended a meeting of the American Congress of Maternal Welfare last month at the Palmer House in Chicago. Dr. Sargent was also formally inducted into the American Academy of Obstetrics and Gynecology.

* * *

Dr. Robert R. Kierland, dermatologic consultant at the Mayo Clinic, Rochester, has been elected assistant secretary-treasurer of the American Academy of Dermatology and Syphilology. The group met last month in Chicago. Dr. Kierland is also associate professor of dermatology in the Mayo Foundation at the University of Minnesota graduate school.

* * *

Convalescing at his home in Browerville is Dr. A. J. Lenarz, who was a patient in St. Paul since he

had a heart attack several months ago. Dr. Joseph Brennan, resident at St. Luke's Hospital, St. Paul, has taken over Dr. Lenarz' practice temporarily.

* * *

At a meeting in December of the Hastings Memorial Hospital medical staff, Dr. N. J. Kulzer was named staff president and Dr. H. T. Fasbender, secretary.

* * *

Mayo Clinic staff physicians attending the meeting of the American Academy of Dermatology and Syphilology in Chicago last month were Dr. L. A. Brunsting, member of the Committee on Education, Dr. H. Montgomery, chairman of the Committee on Pathology, Dr. B. L. Lewis, Dr. R. R. Kierland, Dr. W. F. Kvale, Dr. P. A. O'Leary and Dr. H. O. Perry. Dr. Brunsting led an informal discussion group and conducted a symposium and Dr. Montgomery gave an instructional course and presented an exhibit prepared with Dr. Lewis. Others appearing on the program were Drs. Kierland, Kvale and O'Leary.

* * *

Dr. Adelaide M. Johnson was in New York last month to attend a meeting of the American Psychoanalytic Association. She served as chairman of a panel discussion on psychotherapy.

* * *

Dr. Leonard A. Lang of Minneapolis was elected president of the Minnesota Obstetrical Society at its meeting December 4; Dr. Rodney F. Sturley of Saint Paul was elected vice president, and Dr. Edward A. Banner of Rochester was named secretary-treasurer.

* * *

After a wedding trip to New Orleans, Dr. and Mrs. Gordon J. Vosti are at home in Saint Paul. The bride is the former Marcia Jean Williams of Saint Paul. Dr. Vosti, formerly of California, is on the staff of Minneapolis General Hospital.

* * *

Newly-elected chief of staff of Asbury Methodist Hospital is Dr. Wayne S. Hagen. Dr. Hagen succeeds Dr. P. J. Preston. Dr. Einer Monson was elected vice president, and Dr. M. Elizabeth Craig was chosen secretary-treasurer.

* * *

Dr. Robert Delmore left Roseau for Louisiana, December 27, to do postgraduate study in surgery in New Orleans.

* * *

Two Mayo Clinic staff members were recently named to posts on national medical boards. Dr. D. A. Boyd was re-elected secretary-treasurer of the American Board of Psychiatry and Neurology at its annual meeting in New York City. Dr. F. P. Moersch was appointed to represent the American Board of Psychiatry and Neurology on the advisory board for Medical Specialties.

* * *

Dr. Meyer Z. Goldner is the new president and chief of staff at Mount Sinai Hospital for 1955, suc-

OF GENERAL INTEREST

ceeding **Dr. B. I. Saliterman**. Other new officers are: **Dr. Reuben Berman**, vice president, and **Dr. E. B. Cohen**, secretary-treasurer.

Dr. Earl Hill will be chief of the service for medicine; **Dr. Norman Bloom**, surgery; **Dr. Arnold Anderson**, pediatrics, and **Dr. Melvin Sinykin**, obstetrics and gynecology. **Dr. Manuel Binder** and **Dr. John LaBree** are newly-elected members of the executive committee.

* * *

Host to staff and board of directors of Union Hospital at New Ulm for their annual Christmas party was **Dr. F. H. Dubbe**.

* * *

Dr. Owen H. Wangensteen, chief of the Surgery Department and professor of surgery at the University of Minnesota, has been named one of ten recipients of the 1955 *Modern Medicine* Award for Distinguished Achievement. Announcement of his selection was made by Dr. Walter C. Alvarez, editor in chief of *Modern Medicine* magazine.

Dr. Wangensteen's award is the result of his research in technical surgery and his development of educational programs in the field of surgery. The cross-circulation operation, eliminating the need for heart-lung machines in heart surgery, was developed at the University of Minnesota under his direction.

The award is the only one that represents the opinions of members of the medical profession. The annual awards are made in recognition of significant contributions to medical science and the nation's health.

* * *

At the December meeting of the Medical Staff of **Glenwood Hills Hospital and Homewood Hospital**, the following officers were appointed for 1955: President and chief of staff, Irving C. Bernstein, M.D.; vice president, John Schumacher, M.D., and, secretary-treasurer, J. C. L. Peteler, M.D.

NEW LOCATIONS

Dr. J. A. Abullarade, a former resident of San Salvador, has joined the staff of the Cokato hospital as an associate of **Dr. Theodore Greenfield**. Dr. Abullarade previously was at Eitel, Fairview and Maternity hospitals in Minneapolis.

* * *

Dr. William D. Misbach of Fairmont has accepted a residency at the University of California at Los Angeles. He will train in pediatrics. Dr. Misbach was graduated from the University of Minnesota School of Medicine and interned at Wesley Memorial hospital in Chicago.

* * *

Dr. Allen W. Wittchow, who has practiced ophthalmology in St. Paul, has joined the staff of the Quain and Ramstad Clinic in Bismarck, North Dakota. A graduate of the University of Wisconsin Medical School, Dr. Wittchow interned at General hospital, Minneapolis, and completed a three-year fellowship at Mayo Clinic.

Dr. Thomas Kemp, a graduate of the University of Minnesota School of Medicine, has joined the medical offices of **Dr. G. A. Cooper** and **Dr. C. W. Stoops** in Madison, Wis. He will specialize in dermatology. Dr. Kemp interned at St. Luke's hospital, Duluth, and did postgraduate work at the University of Pennsylvania and at the Philadelphia skin and cancer hospital.

* * *

Dr. William J. Hultgen, who was located at 939 Lowry Medical Arts Building, St. Paul, is now engaged in the practice of ophthalmology at 7809 Herschel Avenue, La Jolla, California.

* * *

Dr. Warren H. Ruchie, a resident of Racine, Wisconsin, for the past two years, has become associated with **Dr. William Macklin, Jr.**, in the practice of radiology at Willmar. Dr. Ruchie, a graduate of the St. Louis University School of Medicine, interned at St. Mary's hospital, and is a Diplomate of the American Board of Radiology.

* * *

Dr. Kermit Stensgaard, who practiced medicine in Thief River Falls from 1946 to 1948, has returned to the city to become affiliated with the Falls Clinic. Dr. Stensgaard was a resident in surgery at Wayne University Hospital, Detroit, in 1948 and served in the Navy until recently.

MINNESOTA BLUE CROSS—BLUE SHIELD

The famous Blue Cross—symbol of the finest in hospital care protection to one out of every four Americans—has been assigned a new protective role. To protect you on the road, this emblem is covered in a highly-reflective material that can be seen for a distance of half a mile under head-light beams. Attached to the rear bumper of your car, it can mean life-saving protection if your tail light fails. When you are parked, the emblem's brilliant glow gives approaching motorists ample warning. Night or day, this Blue Cross emblem on your car gives you an added measure of safety and security.

Blue Cross will be happy to furnish you and your associates with emblems without cost or obligation. You can obtain an adequate number of free emblems by dropping a card or letter to the Blue Cross office.

Throughout the first month during which Blue Shield field representatives have been fully active in the Professional Relations programs, visits have been made to the offices of approximately 600 doctors in the Twin Cities and the surrounding area.

The principal purpose of this program is one of service to the doctors. Through the discussion of mutual problems which arise, more information about Blue Shield is furnished the doctors and their office personnel. In the reports submitted by the Blue Shield field representatives engaged in this work, questions have arisen about consultation services, diagnostic x-ray benefits when the x-rays are directly related to in-hospital medical care, surgery or obstetrical services, the meaning of the term "emergency medical care," which is defined in the contract as medical services required when the condition for which the patient is hospitalized places the patient's life in immediate and serious danger. Other inquiries have related to the information necessary in presenting a claim for payment by Blue Shield. In the latter, the result of

OF GENERAL INTEREST

this program of service may ultimately eliminate many problems which affect the prompt payment of claims.

Complete and detailed records are being maintained, including any recommendations made by doctors regarding the administration of Blue Shield and proper liaison between Blue Shield and the doctor or his staff. In view of the fact that the program has been so well received in the Twin Cities, it is being expanded to cover the doctors outside of the Twin City area. Having found the program to be beneficial both to the doctors and to Blue Shield, the field representatives are now going in the other areas of the state. With the co-operation of the members of the medical profession, a mutual understanding and resulting improved administration should result from this program.

DIAGNOSIS OF CORONARY HEART DISEASE

(Continued from Page 55)

put the greatest reliance. Extensive cardiovascular research is presently being done to ascertain the etiology of atherosclerosis. Ultimately the pieces of this puzzle will fall into place, and the completed picture will emerge. When the etiology becomes apparent, appropriate diagnostic as well as better prophylactic and therapeutic measures should also become available.

MILTON M. HURWITZ, M.D.

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